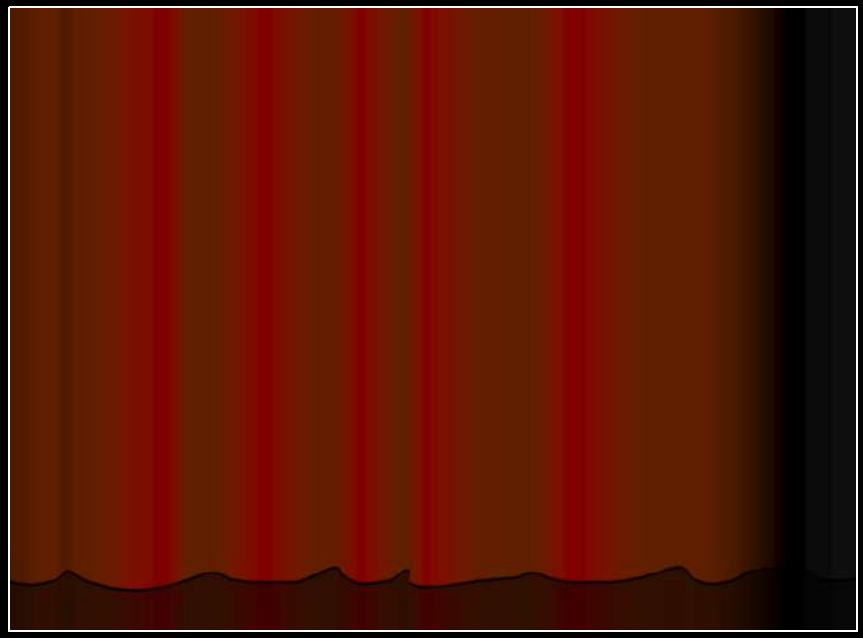
Water Cycle and Clouds

- RED SLIDE: These are notes that are very important and should be recorded in your science journal.



-Nice neat notes that are legible and use indentations when appropriate.

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-Example of indent.

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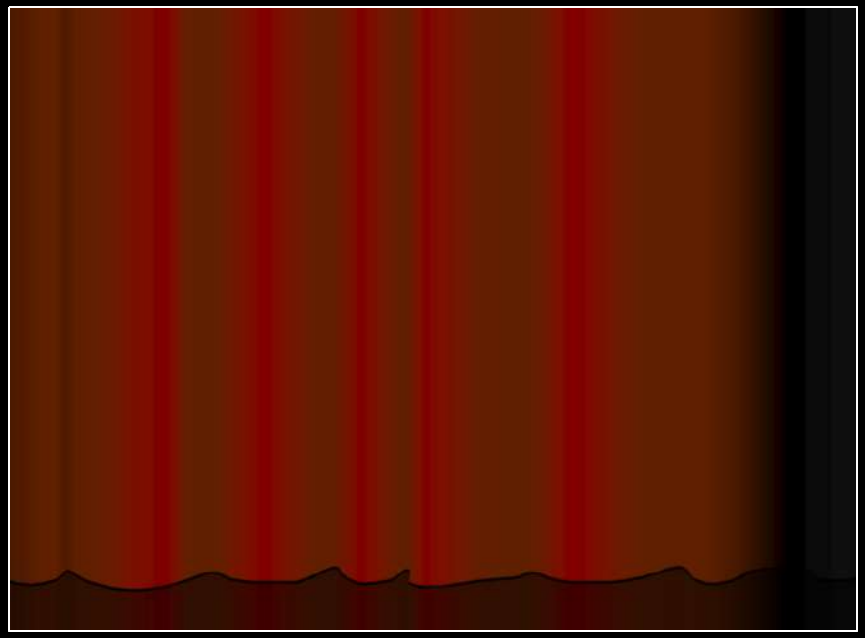
- RED SLIDE: These are notes that are very important and should be recorded in your science journal.
- BLACK SLIDE: Pay attention, follow directions, complete projects as described and answer required questions neatly.



- Keep an eye out for “The-Owl” and raise your hand as soon as you see him.
  - He will be hiding somewhere in the slideshow

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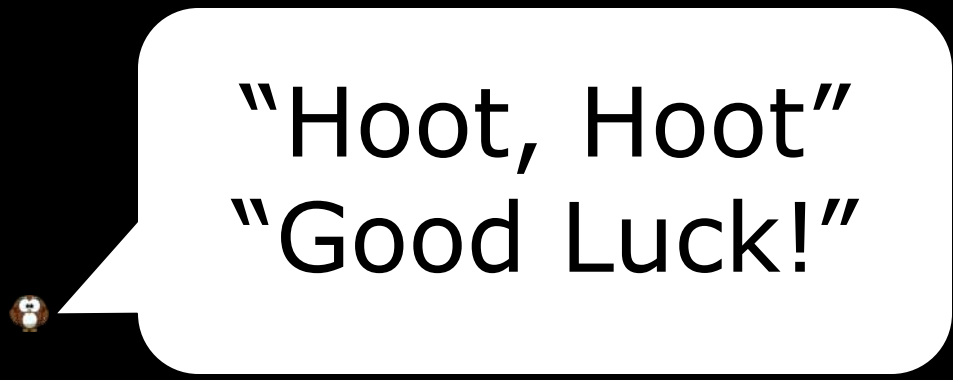

- Class Expectations

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  - You can show respect by…

Water Cycle and Clouds

- What's so special about the water in this photograph?

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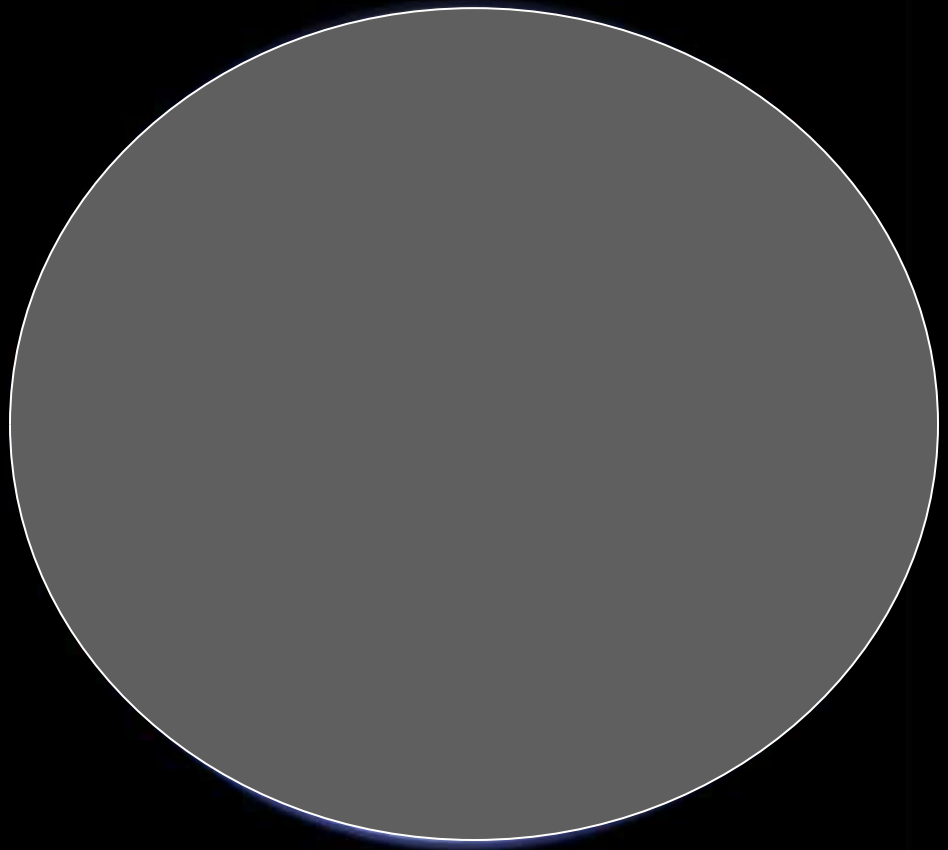
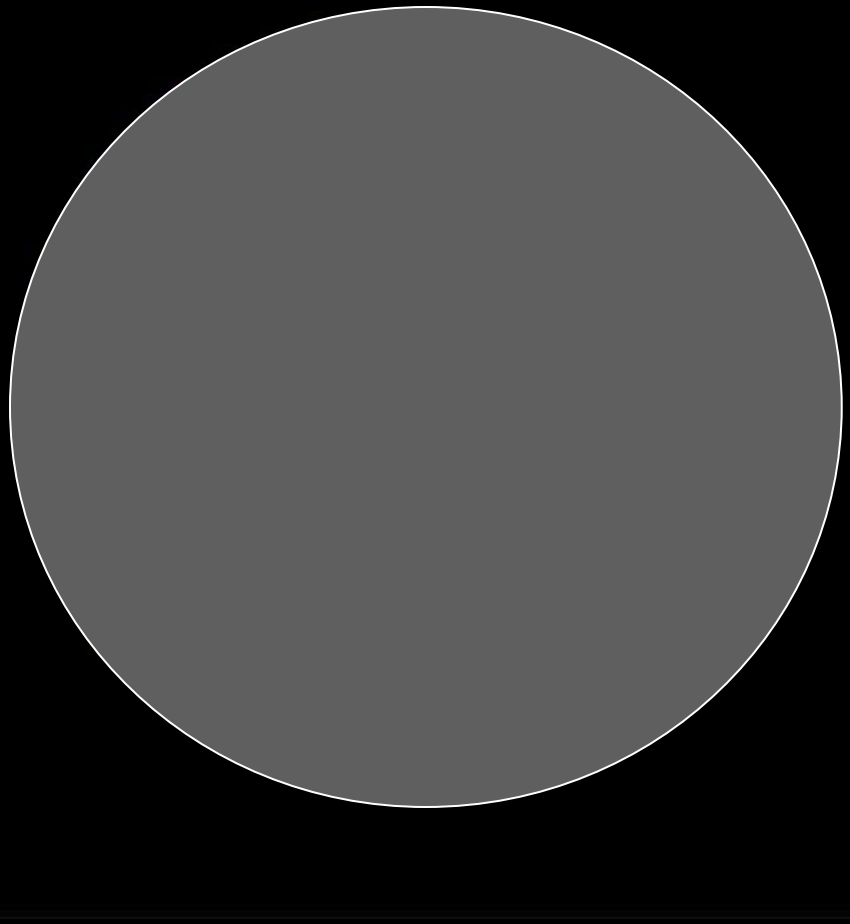
- Compare the importance of water commonly existing in all three states of matter.





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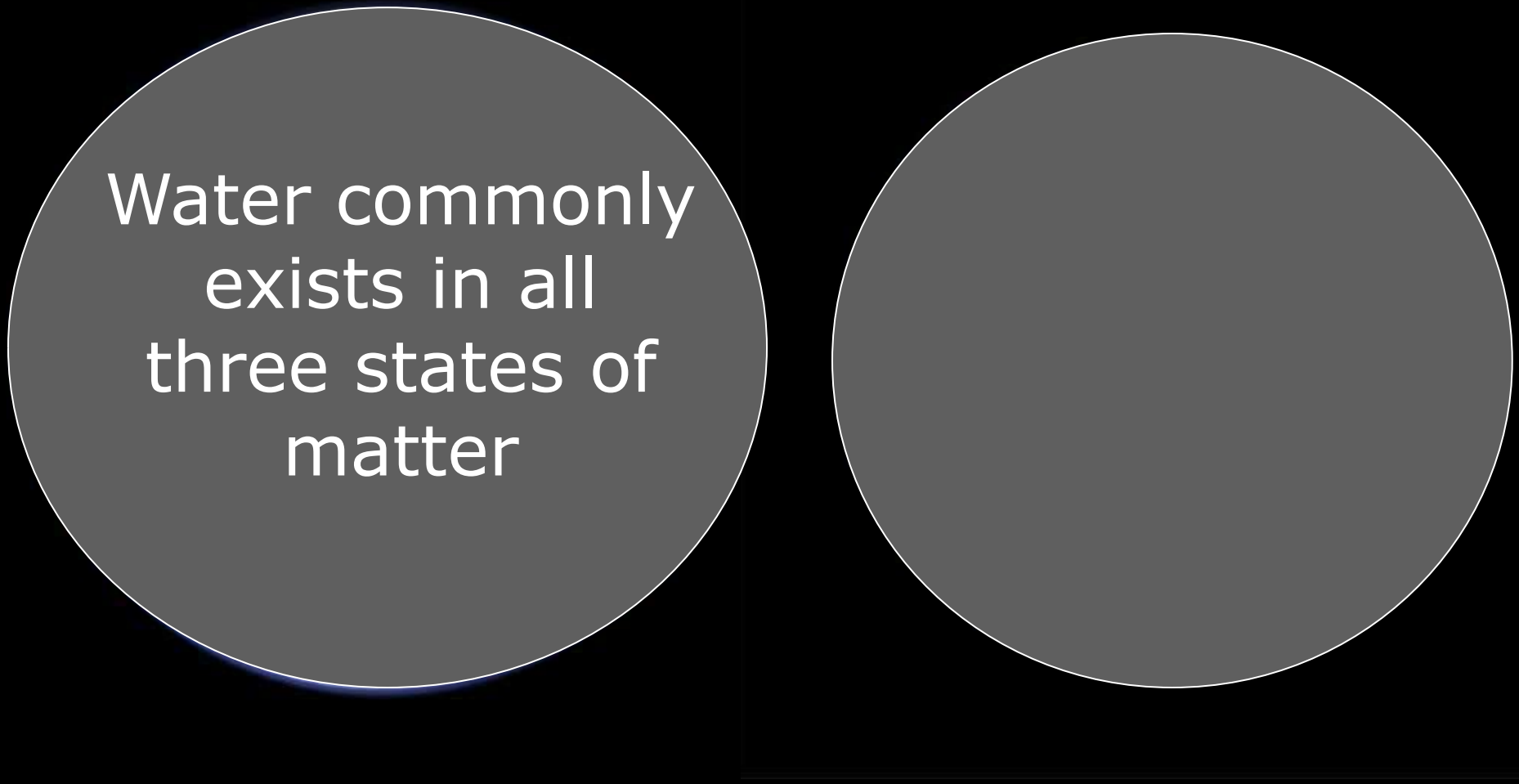

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Water commonly exists in all three states of matter

Water exists commonly in its solid state

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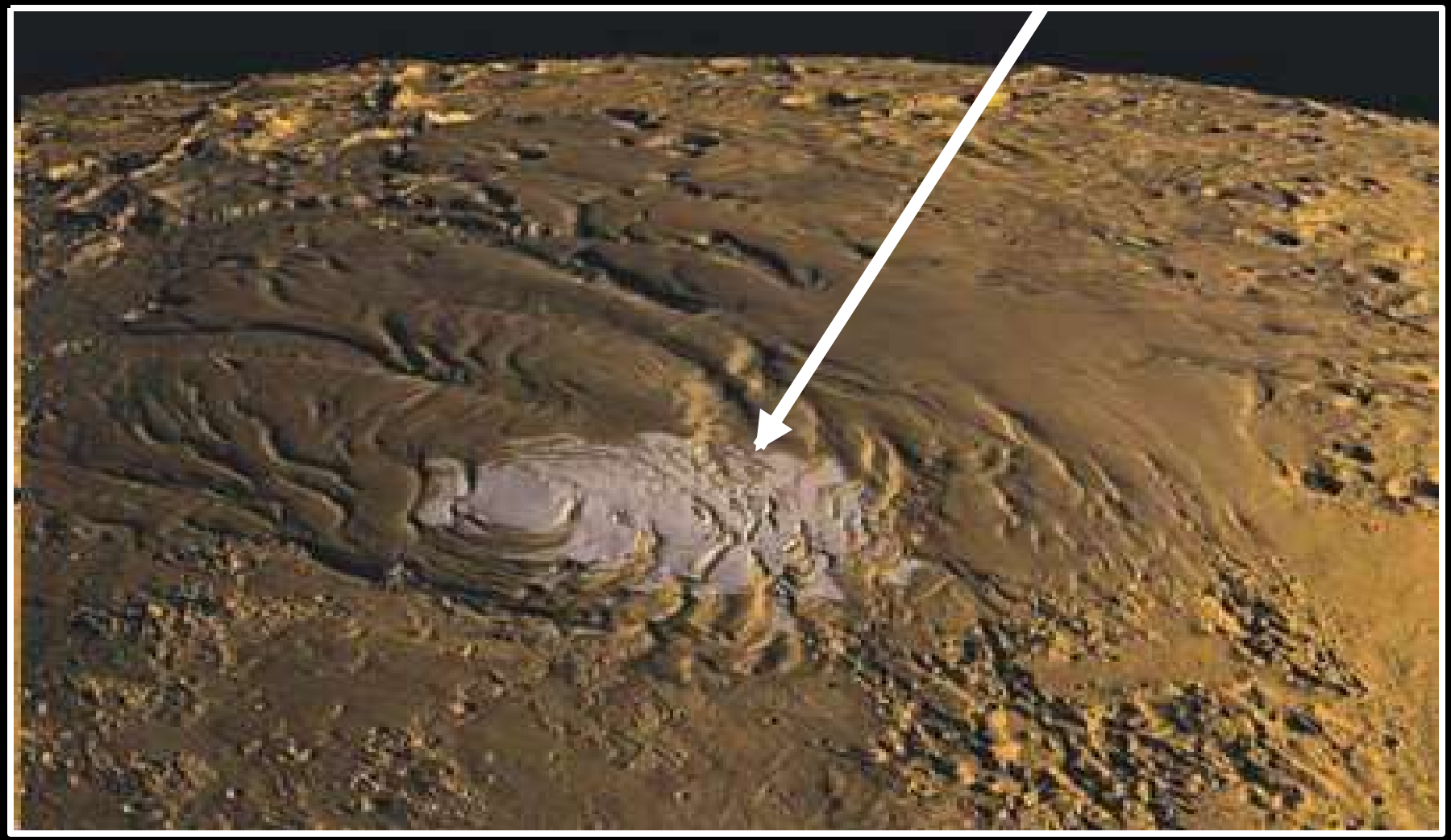
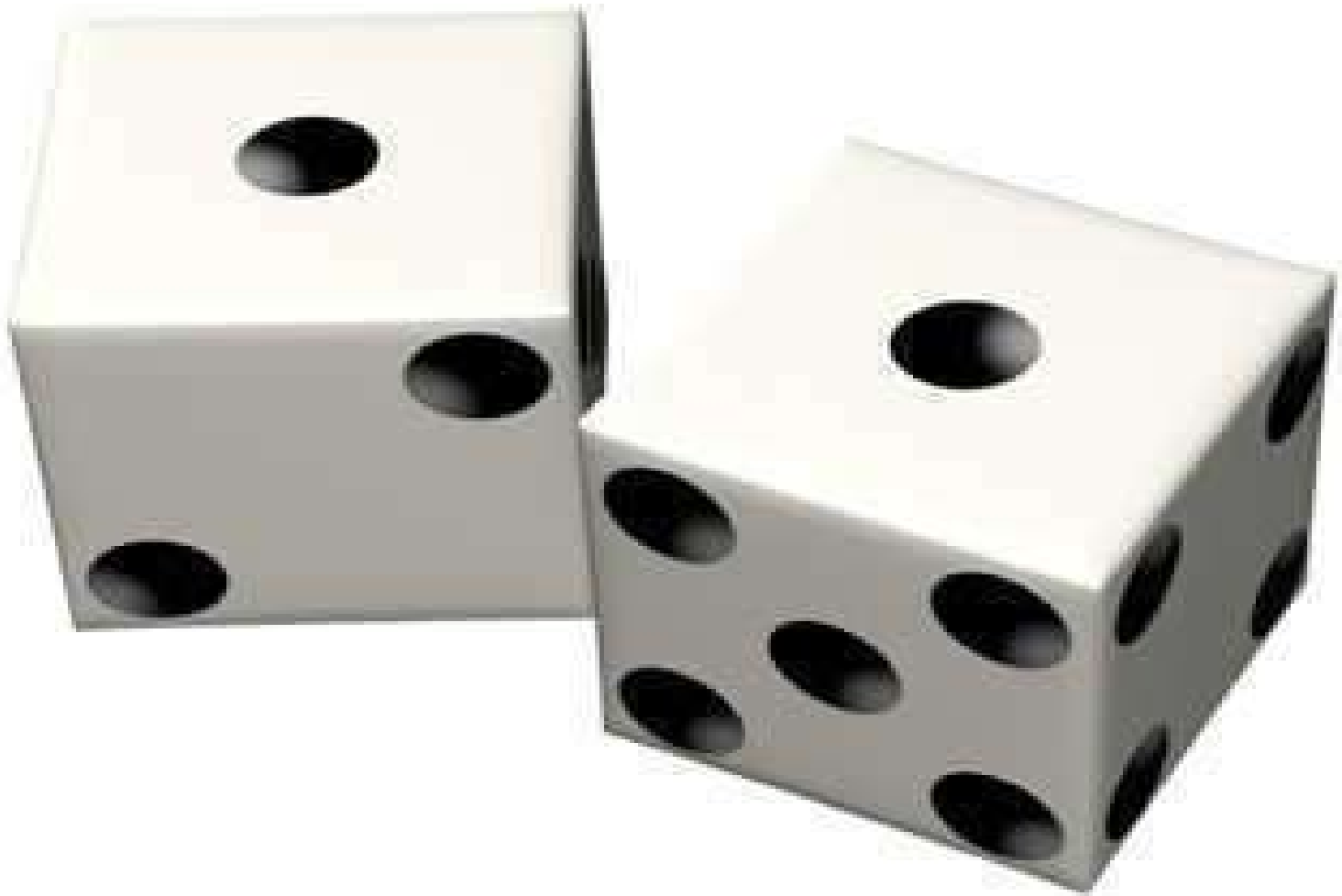
- On Mars, we can see that water is most abundant in its solid form of ice.



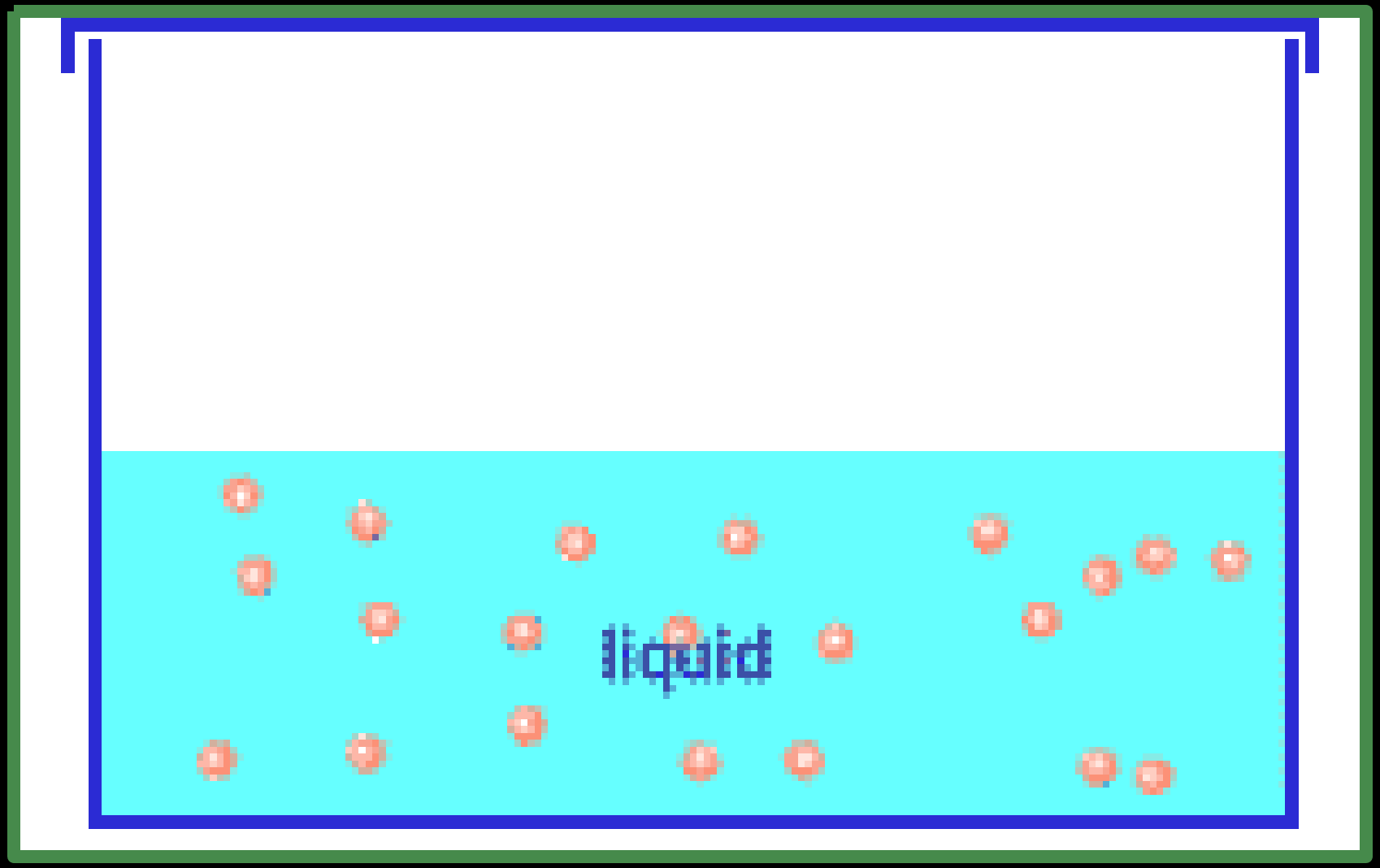
Planet that was believed to have no water at all


Pay attention

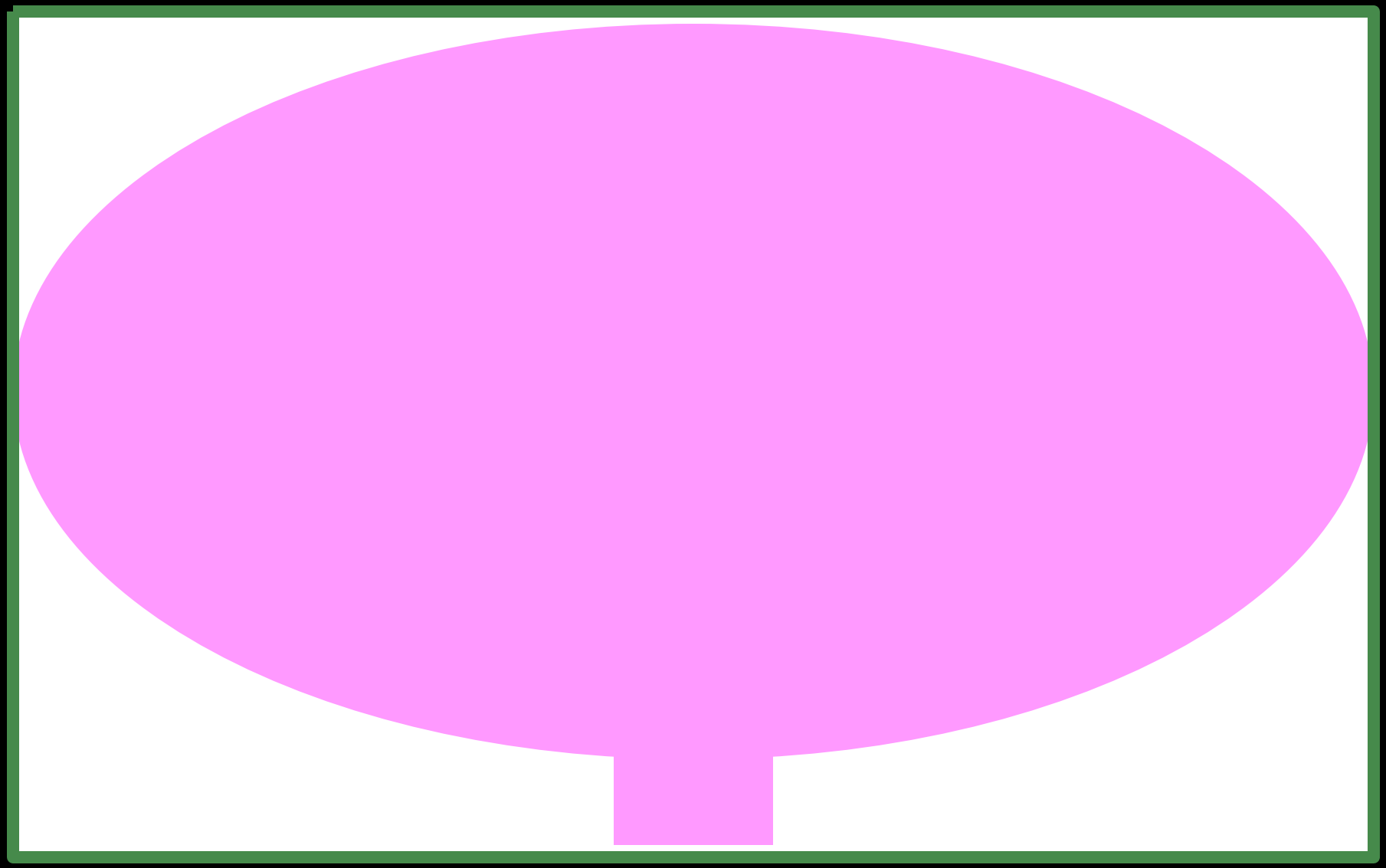
- Solid (s) has a definite shape and volume.



- Liquid (l) Has definite volume but not shape.



- Gas (g) No definite shape or volume.



- Water can exist on earth as a solid, liquid, and gas.
  -

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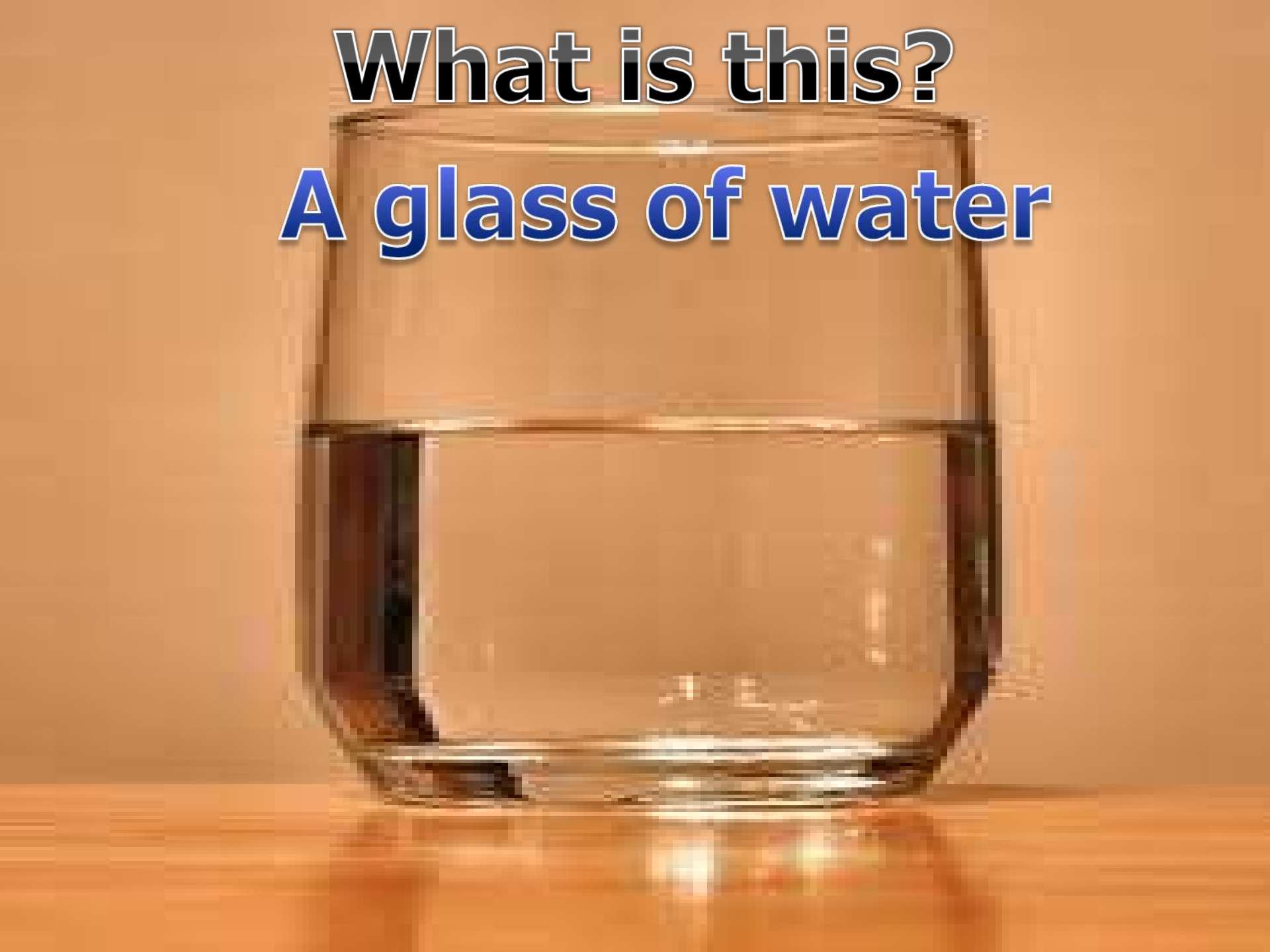
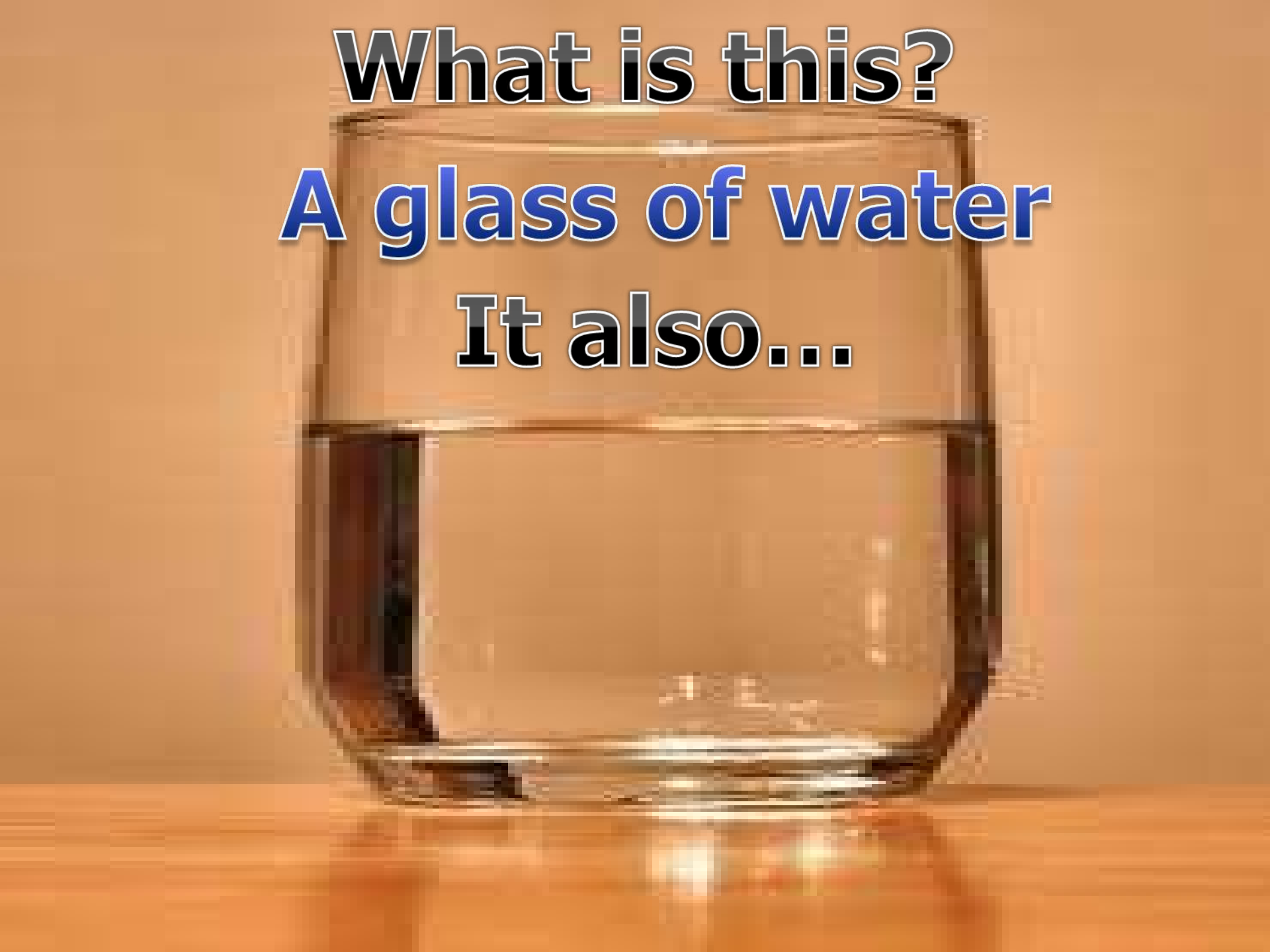
  - Water is a liquid between 0 and 100 degrees Celsius.

What is this?

What is this?




What is this?
A glass of water
It also...

What is this?

A glass of water

It also…

was in ancient dinosaur urine.

What is this?

A glass of water

It also...

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Part of ancient comets

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What is this?

A glass of water

It also...

was in ancient dinosaur urine.

Was possibly drank by Julius Ceasar

Part of ancient comets

Summary

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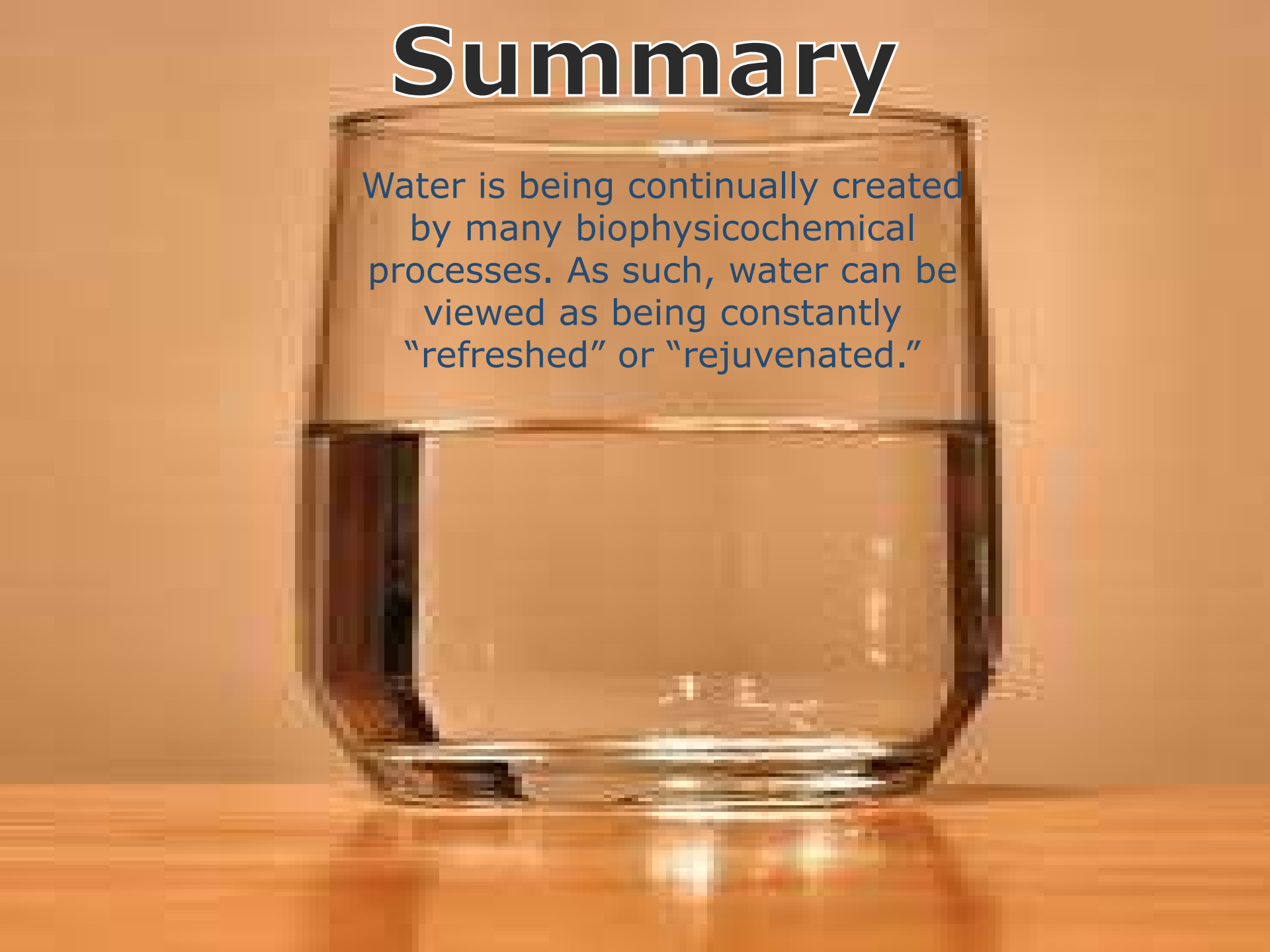

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Summary

Water is being continually created by many biophysicochemical processes. As such, water can be viewed as being constantly "refreshed" or "rejuvenated."

The water in dinosaur pee is not the same water that we drink. The H's and O's that make up H_2O are the same ones present when the dinosaurs roamed the Earth.

- New Area of Focus: The Water Cycle

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- AKA – The Hydrologic Cycle

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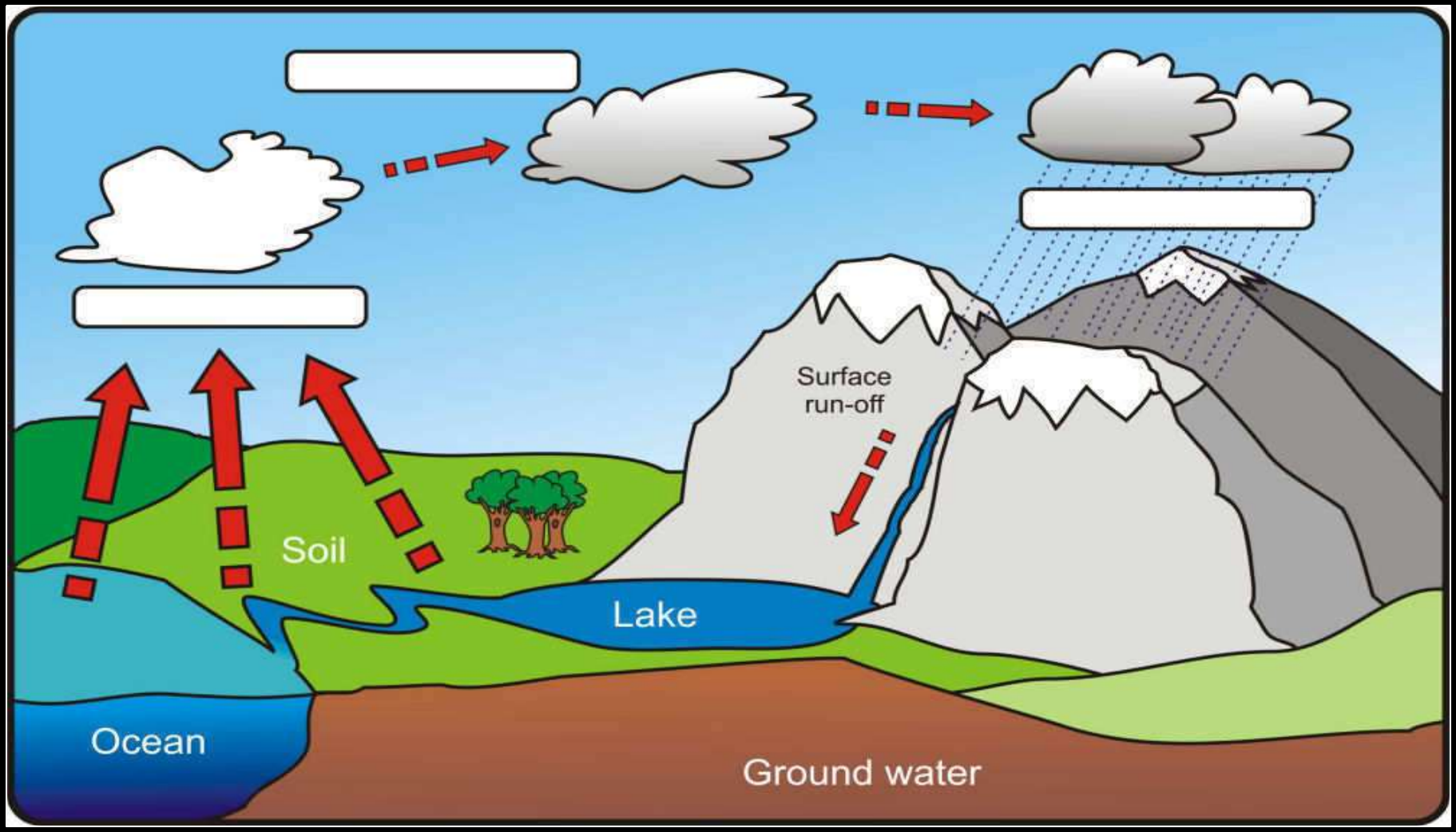
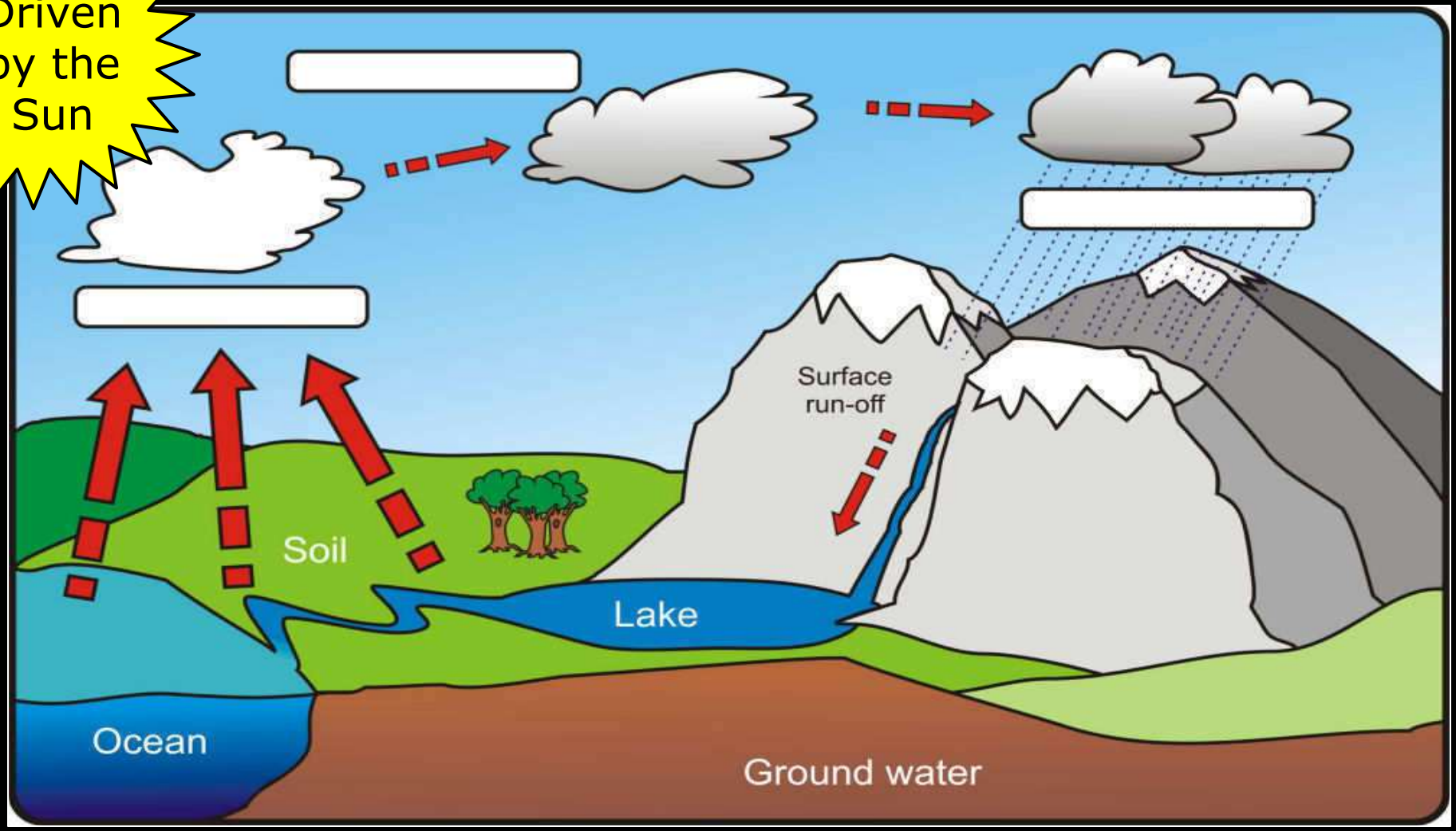
- AKA – The Hydrologic Cycle
  - Driven by the sun and gravity.



Driven by the Sun



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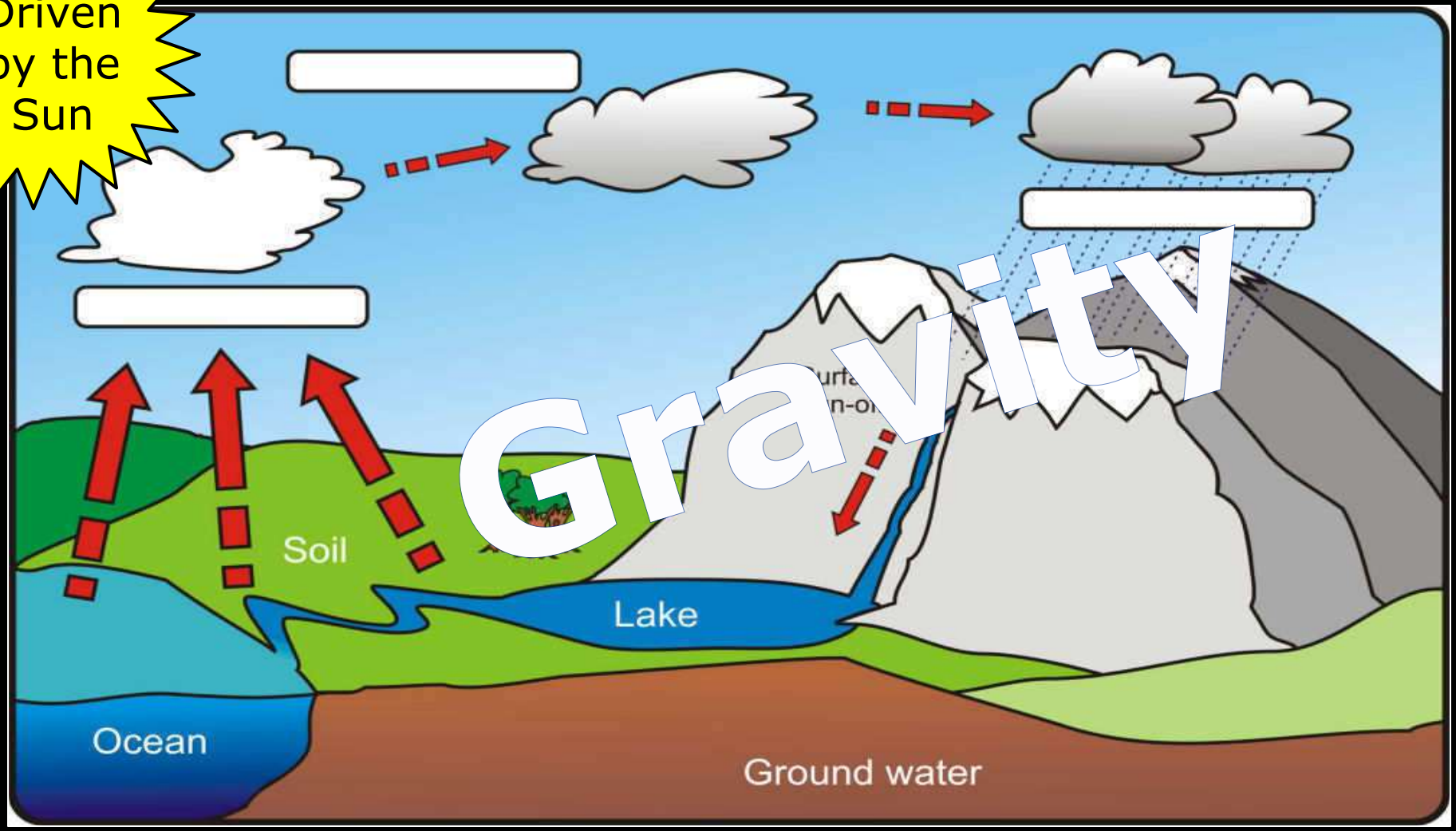
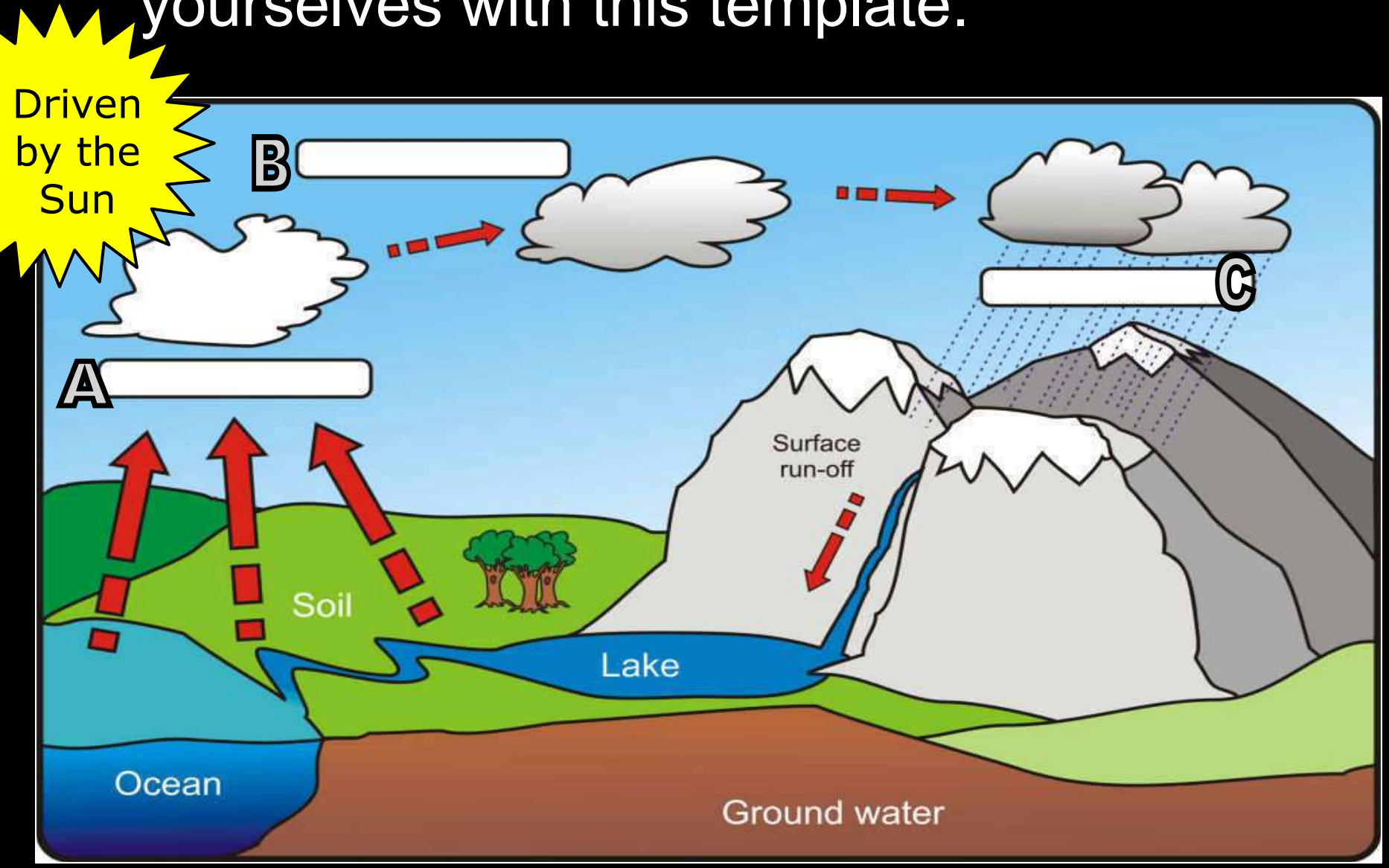


- What do we already know? Explain yourselves with this template.



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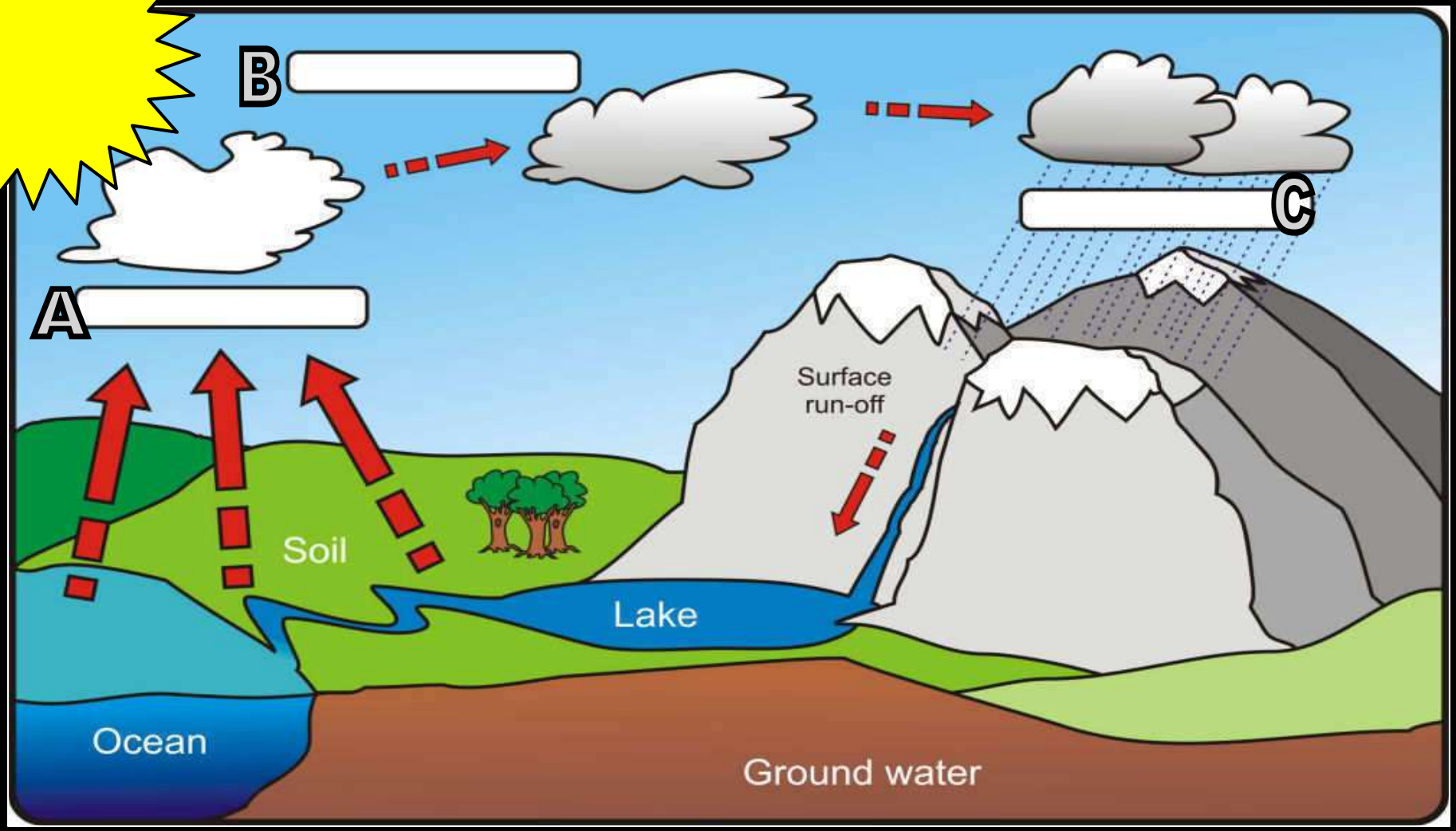

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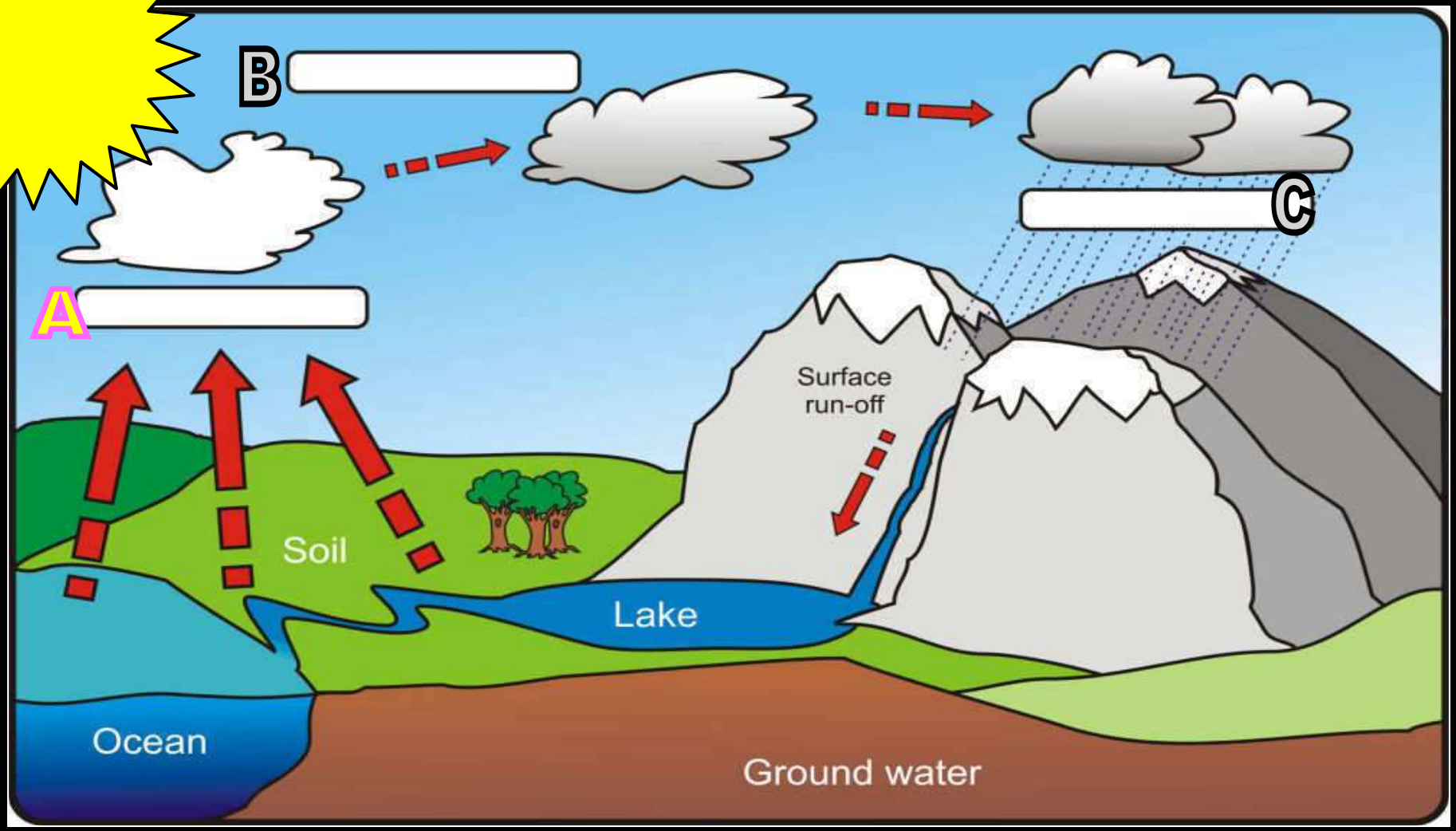

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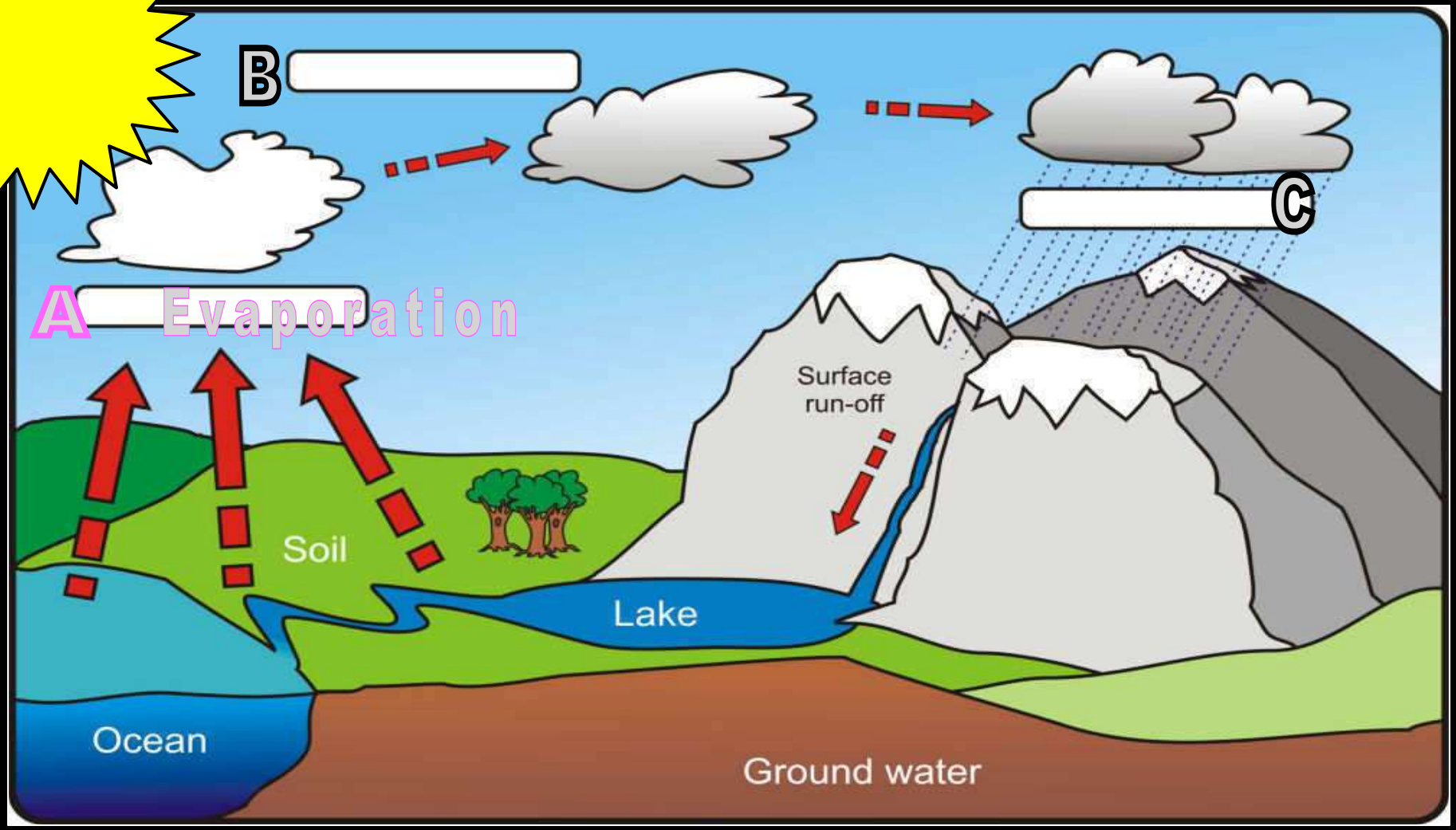

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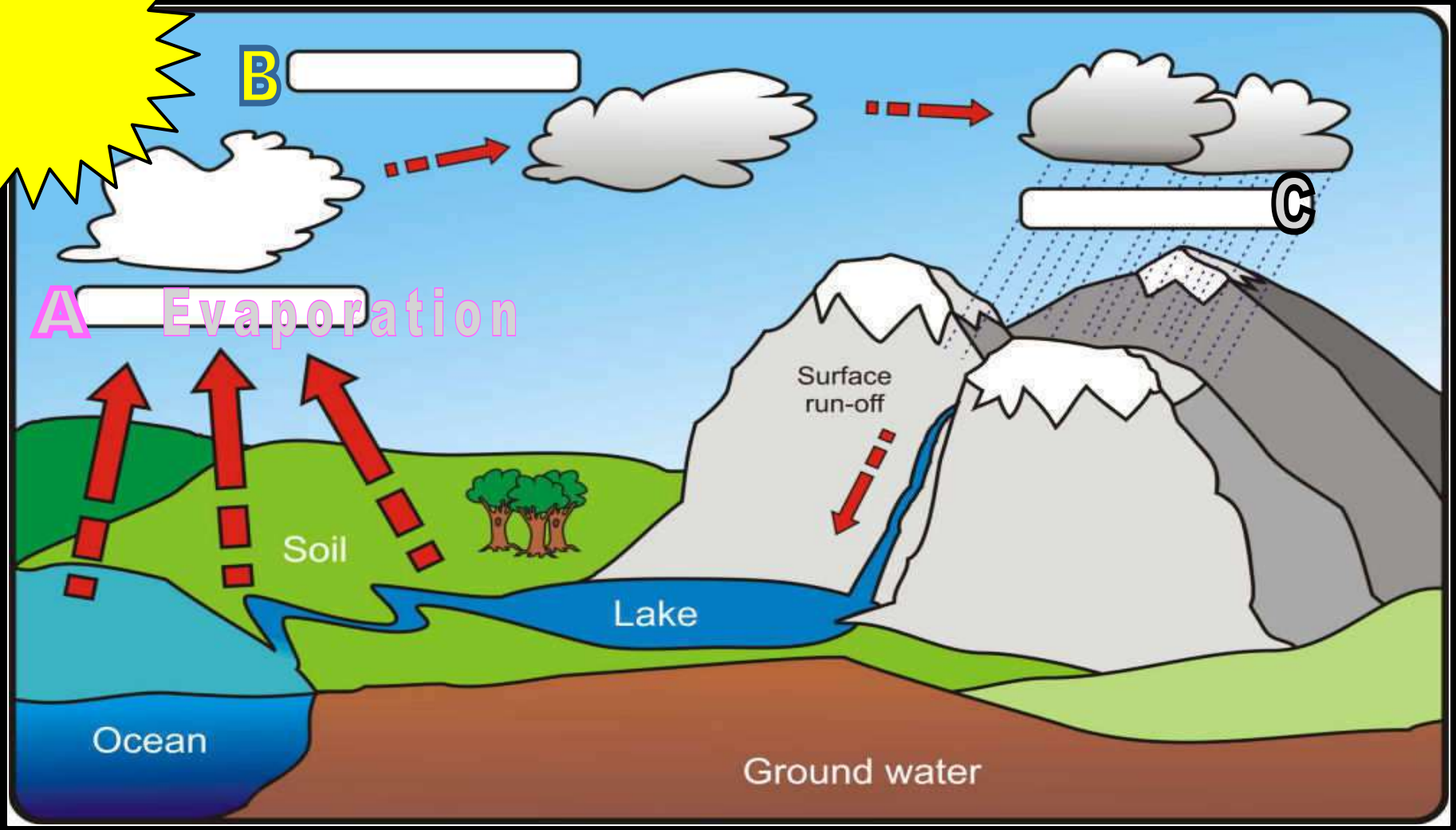

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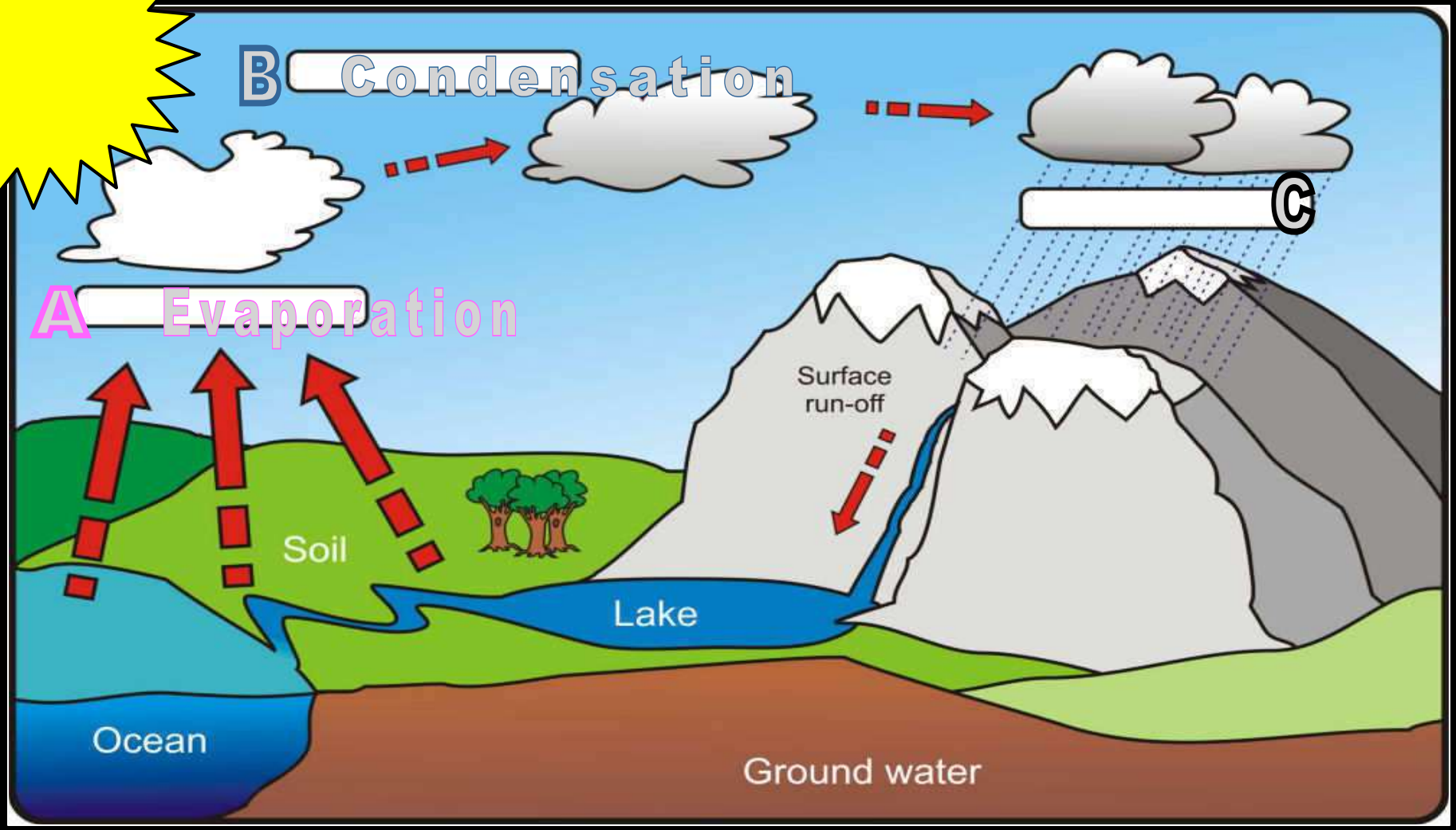

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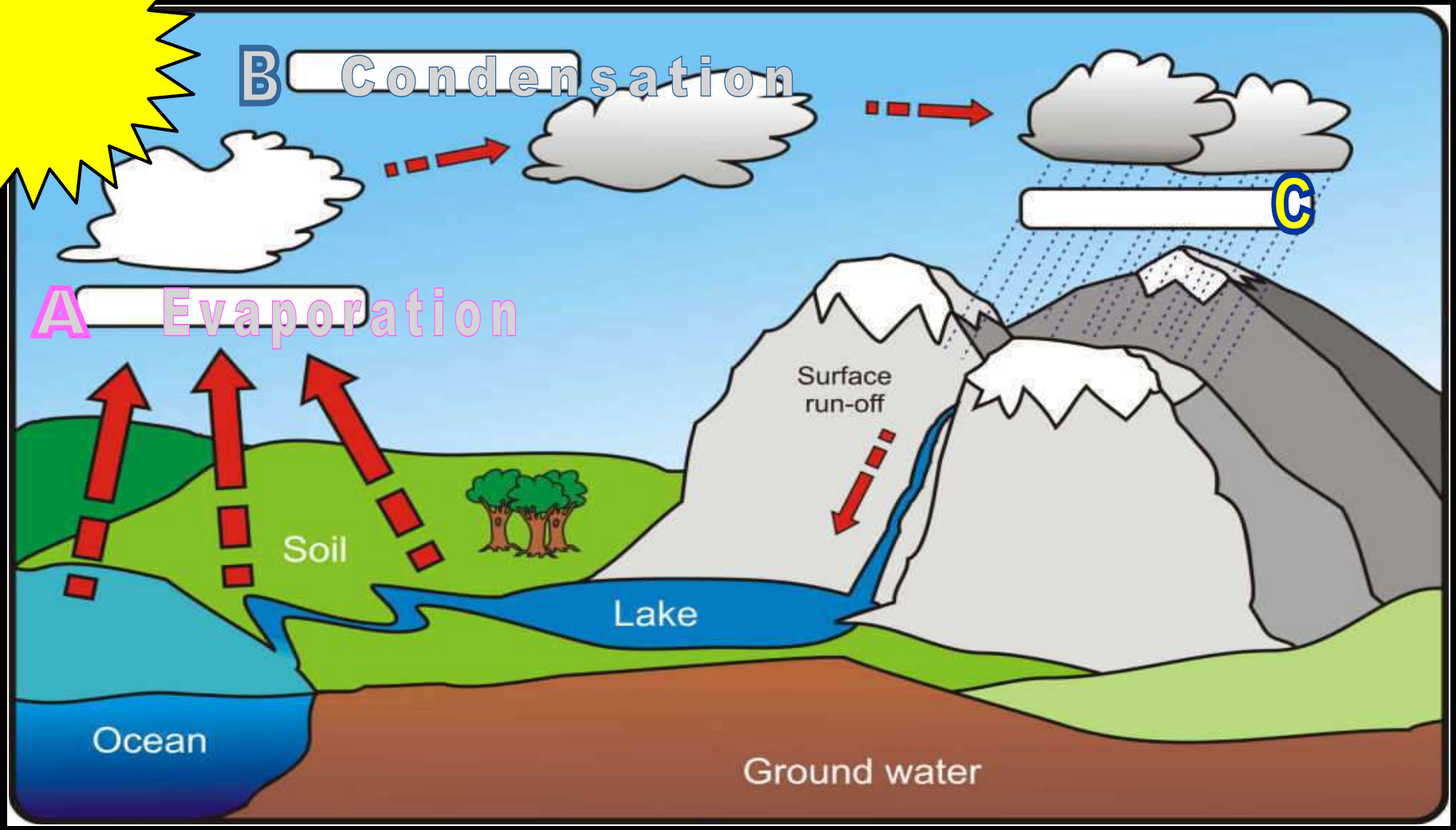

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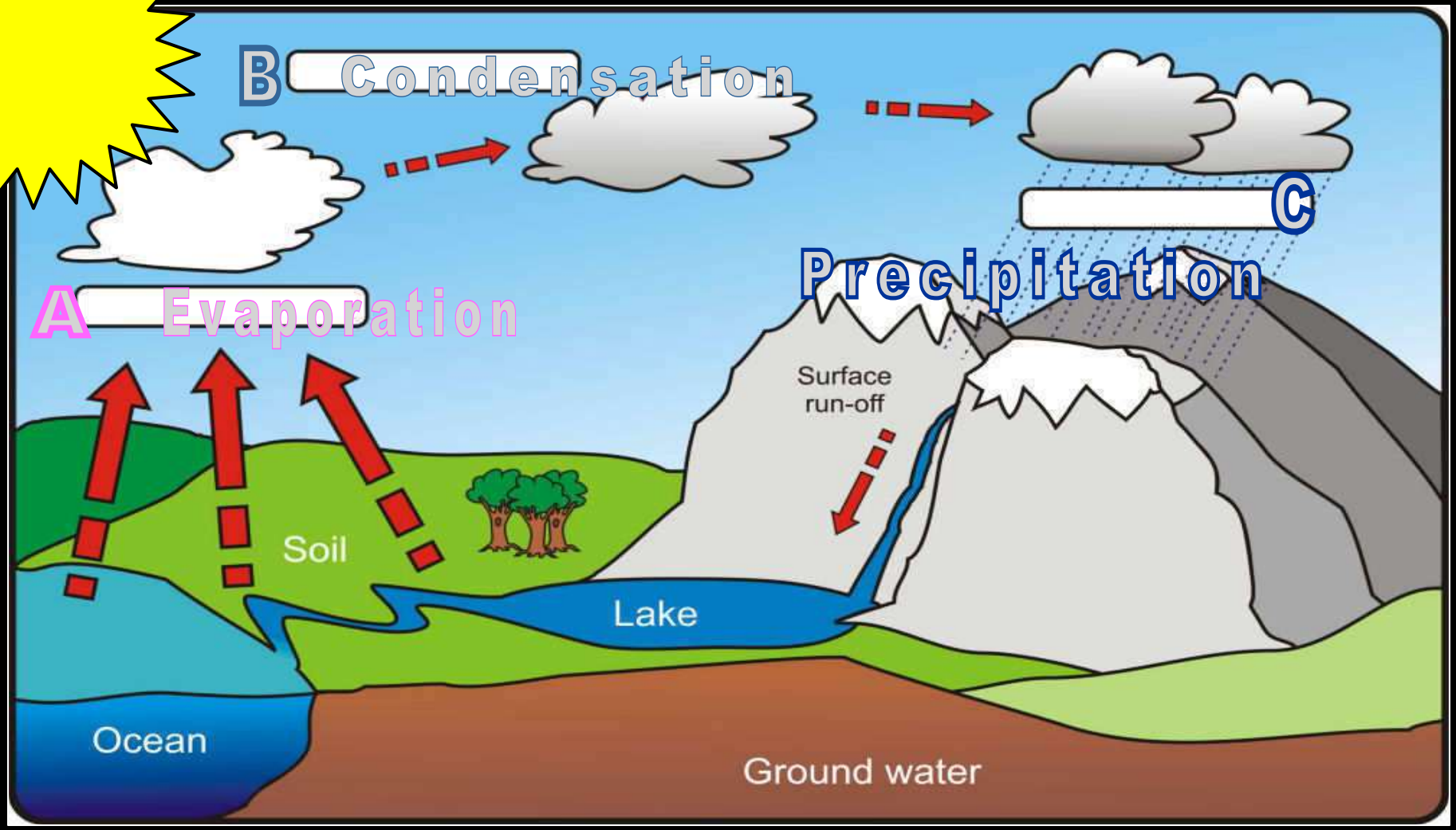

- Which of the other terms are we unsure of..
  - Condensation
  - Evaporation
  - Precipitation
  - Percolation
  - Transpiration
  - Sublimation
  - Infiltration
  - Ocean Storage
  - Ground Water Storage
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We will review these terms

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We will review these terms

and learn some new terms

- The hydrologic cycle (Water Cycle):

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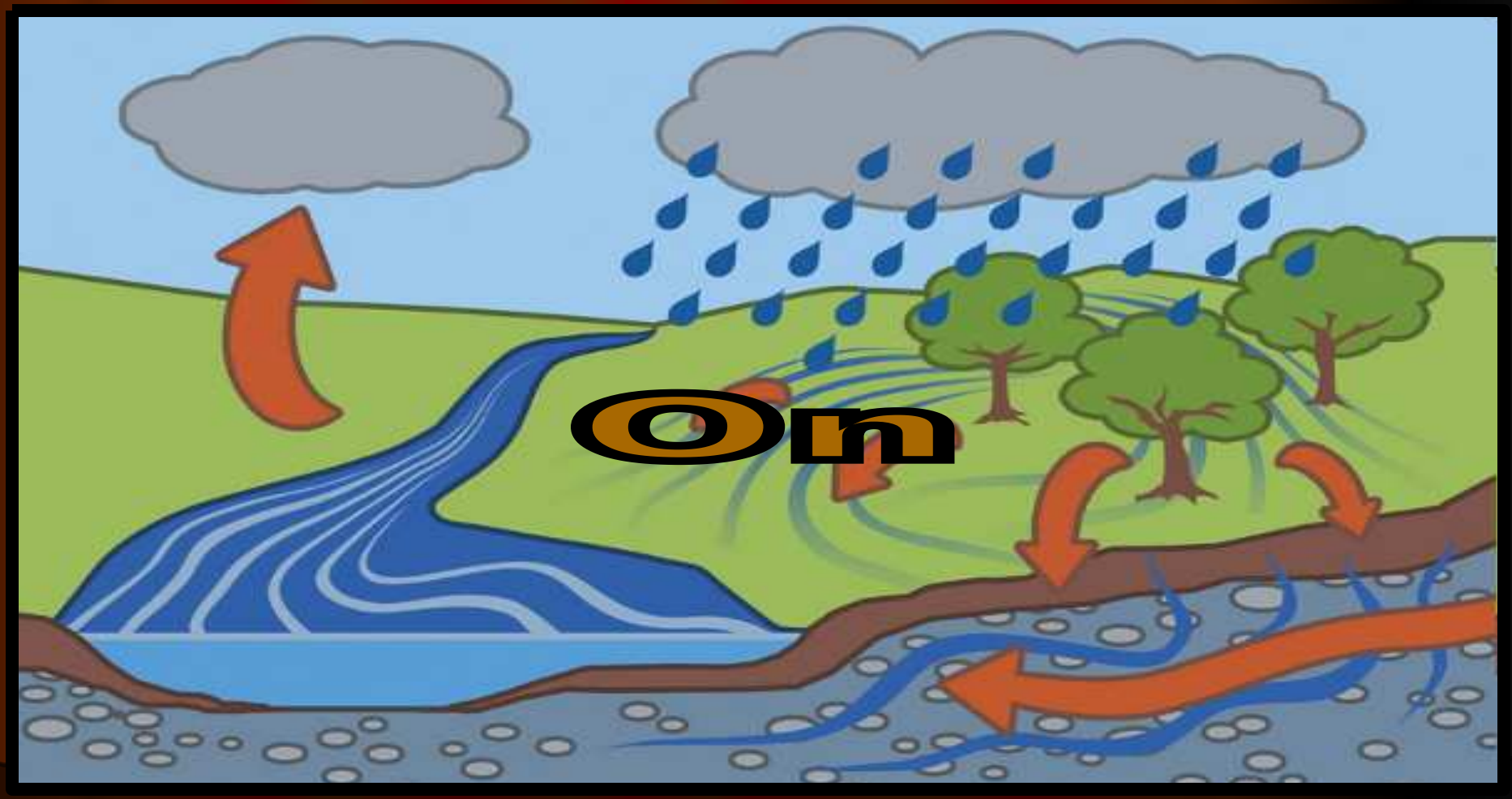
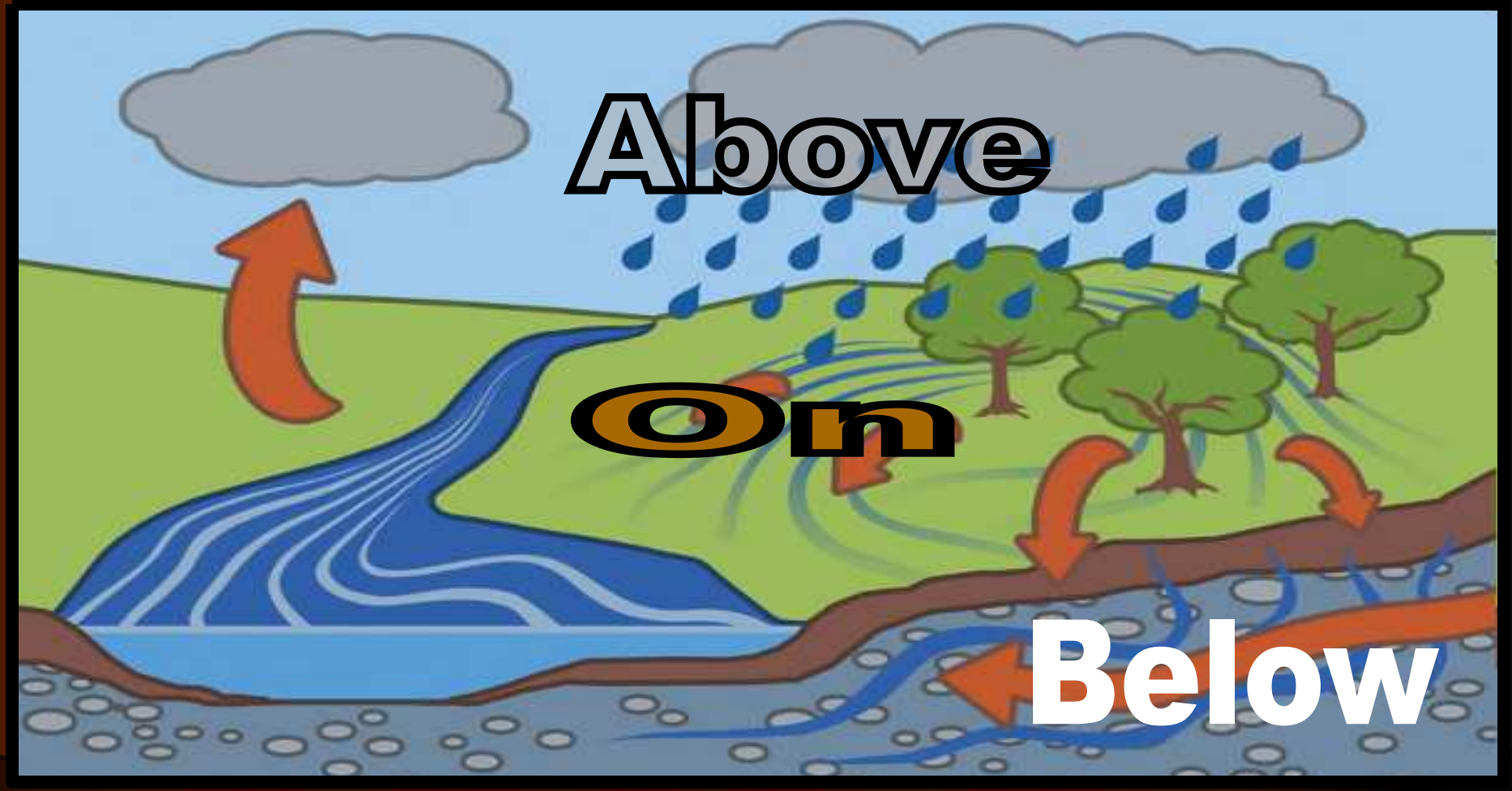
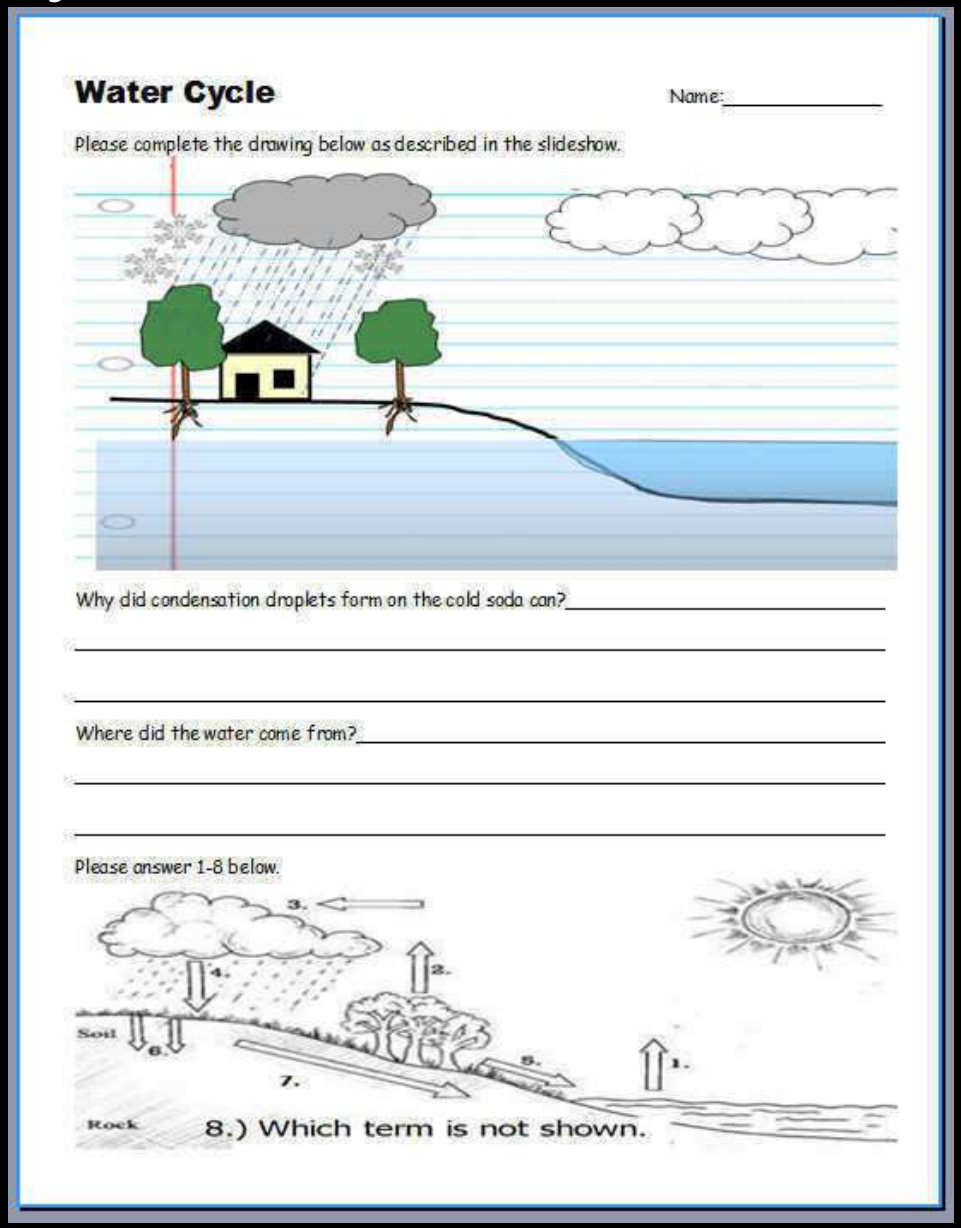


- The hydrologic cycle (Water Cycle): The continuous movement of water on, above,

- The hydrologic cycle (Water Cycle): The continuous movement of water on, above, and below the surface of the earth.



- Water Cycle Available Sheet



Water Cycle

Name:_____

Please complete the drawing below as described in the slideshow.

Why did condensation droplets form on the cold soda can?_____

_____

_____

Where did the water come from?_____

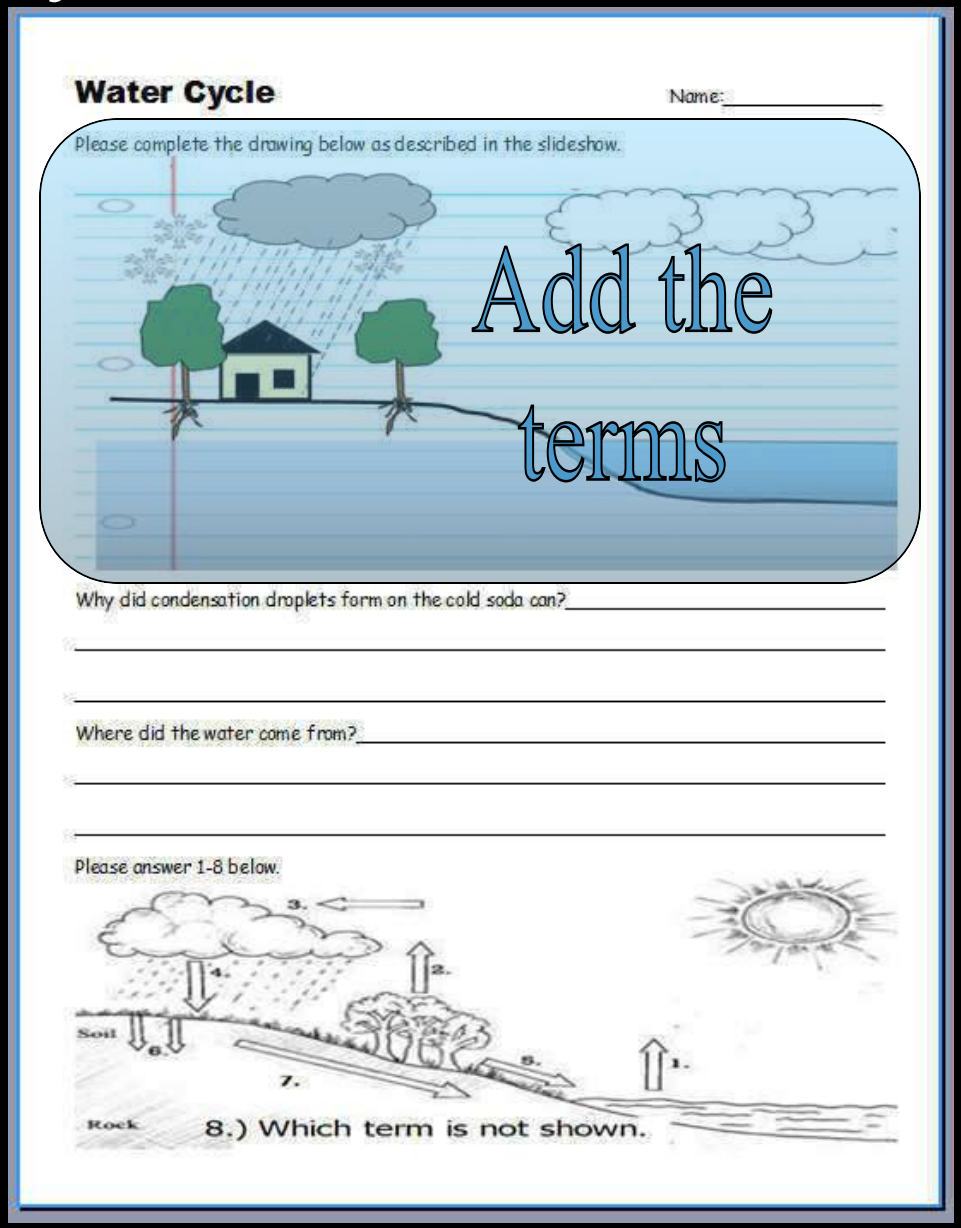
_____

_____

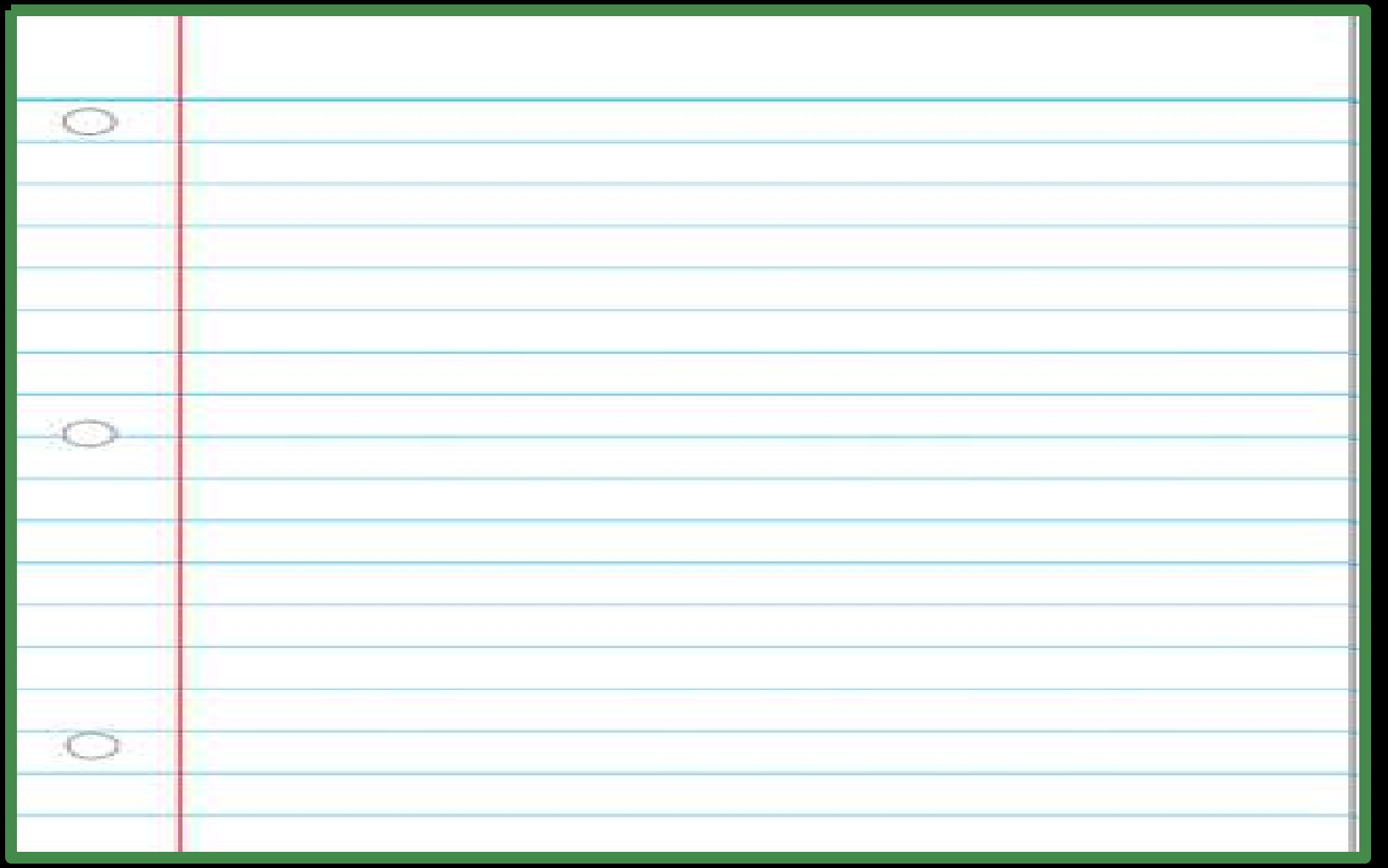
Please answer 1-8 below.

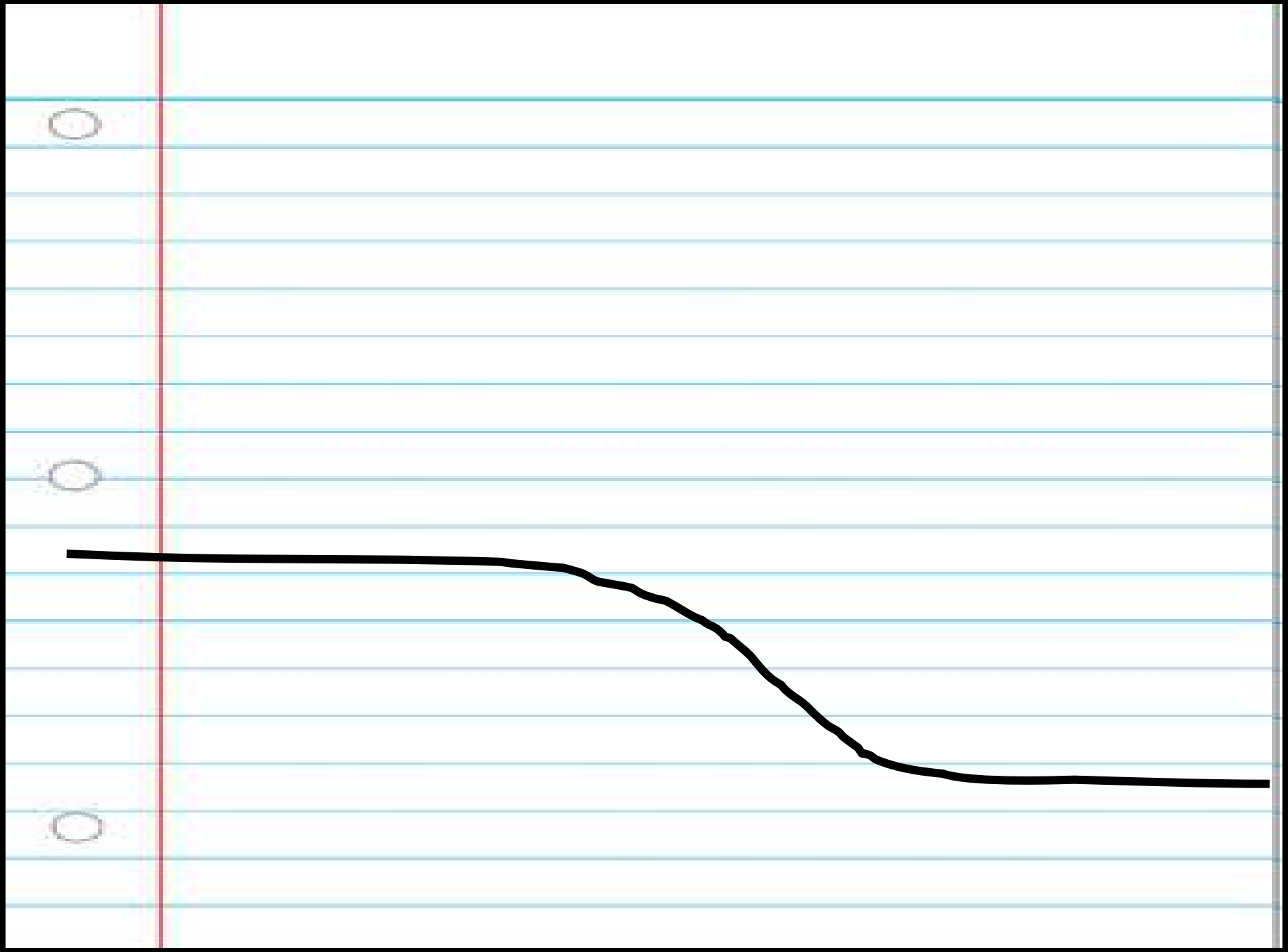
8.) Which term is not shown.

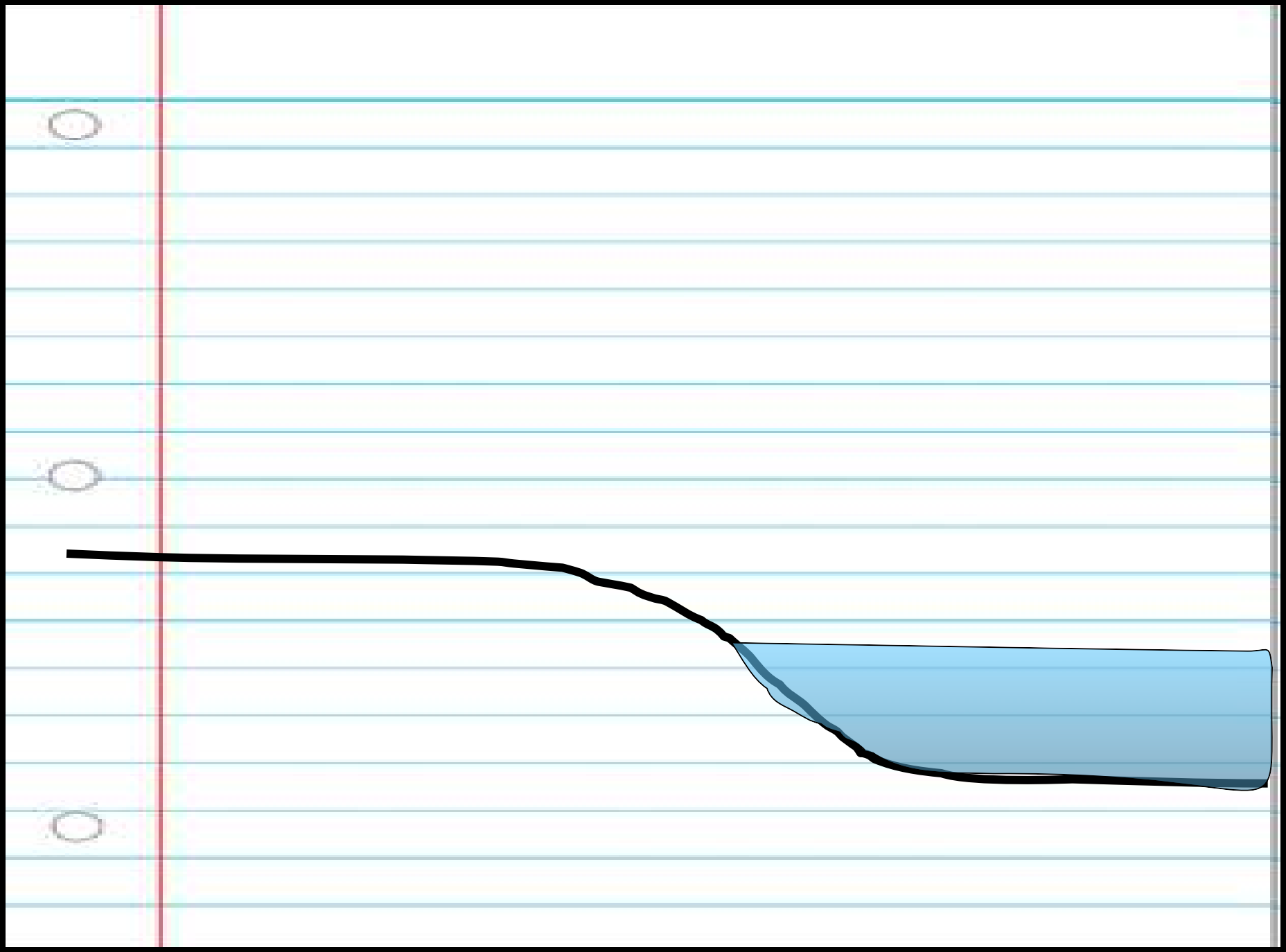
- Water Cycle Available Sheet

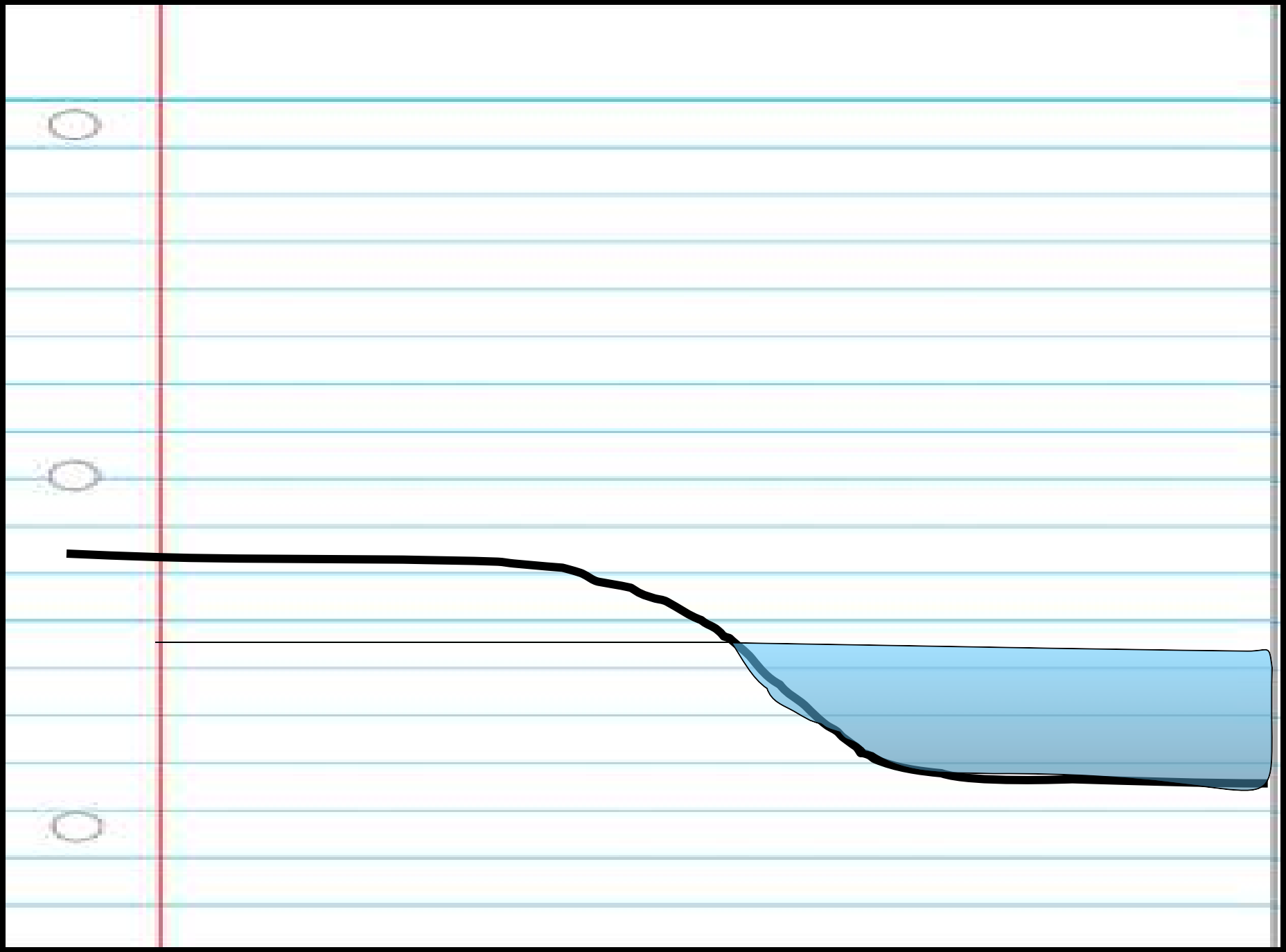


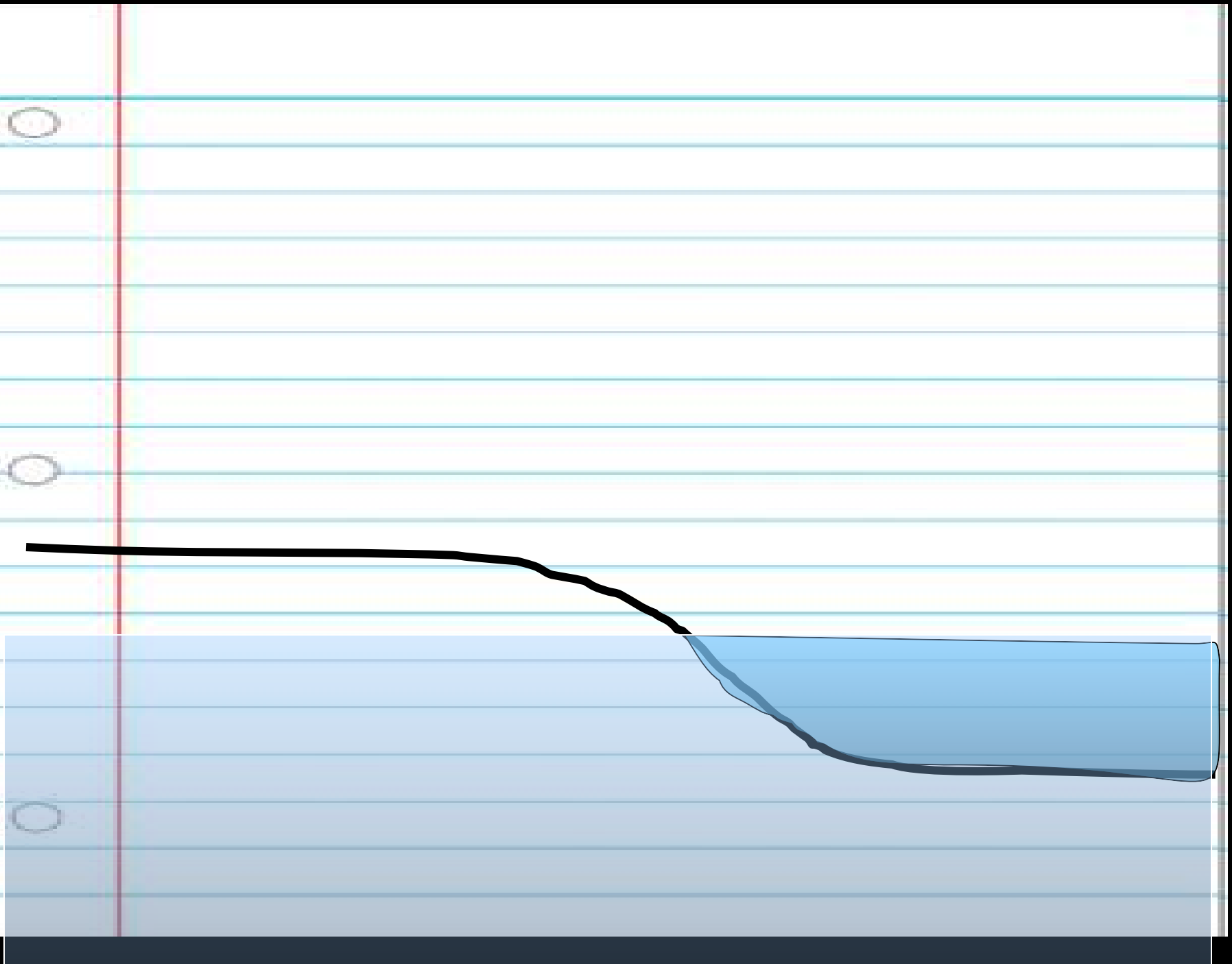
- Step by step drawing of the water cycle.

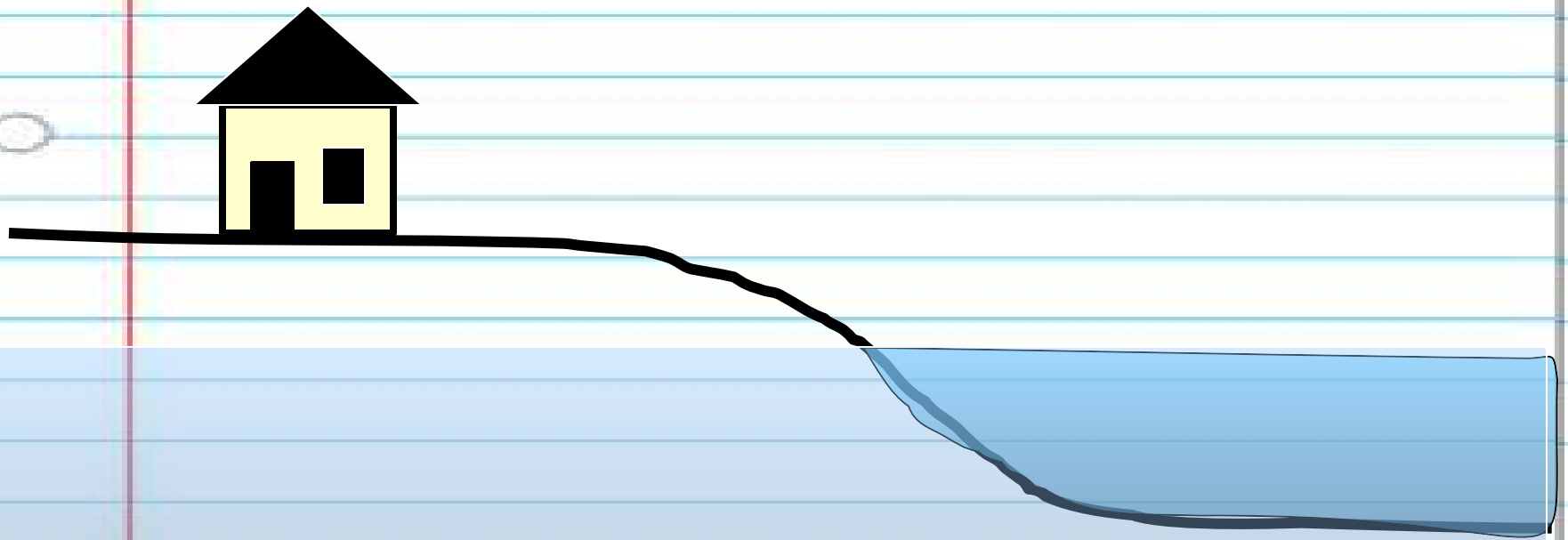


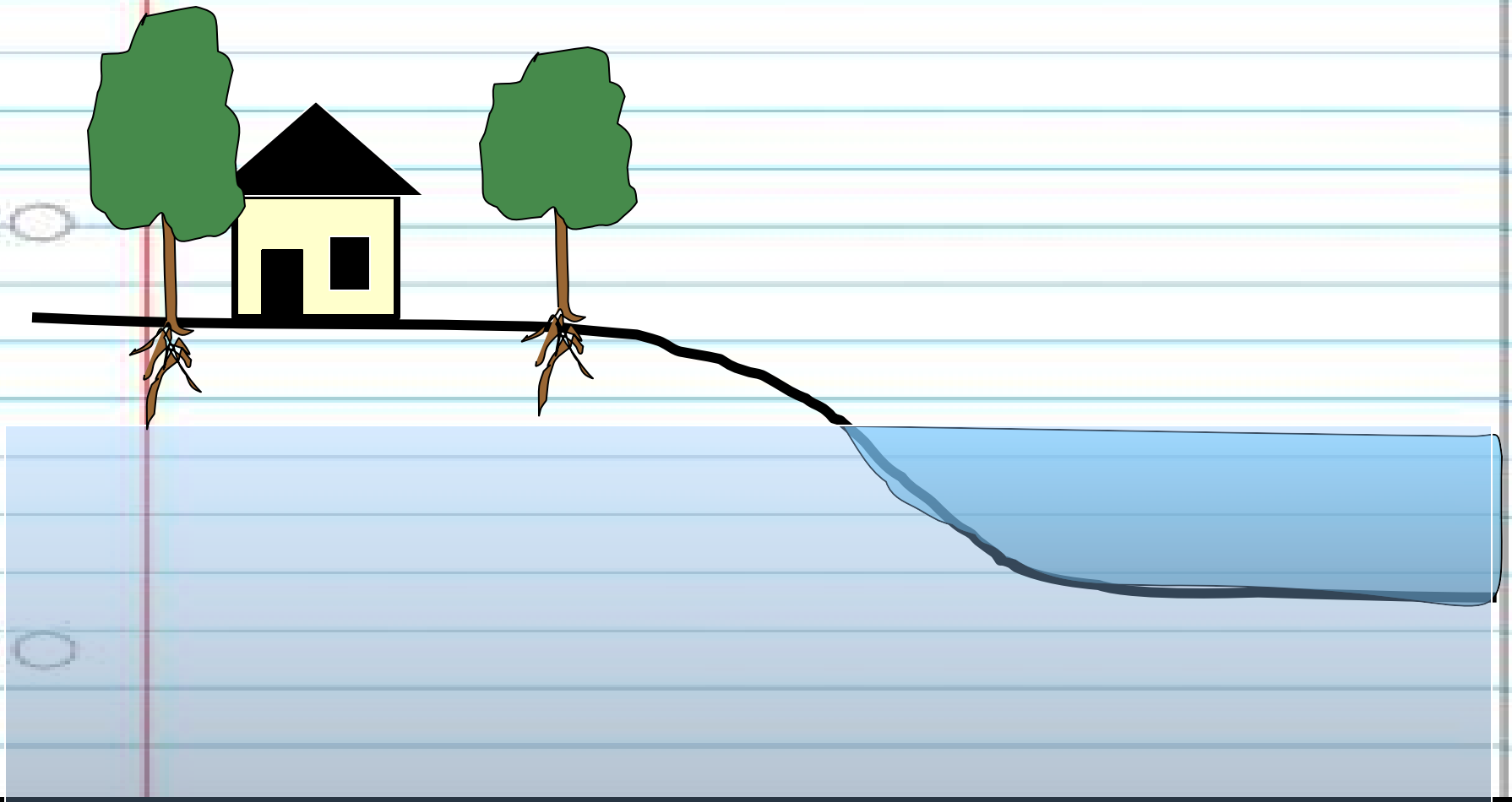


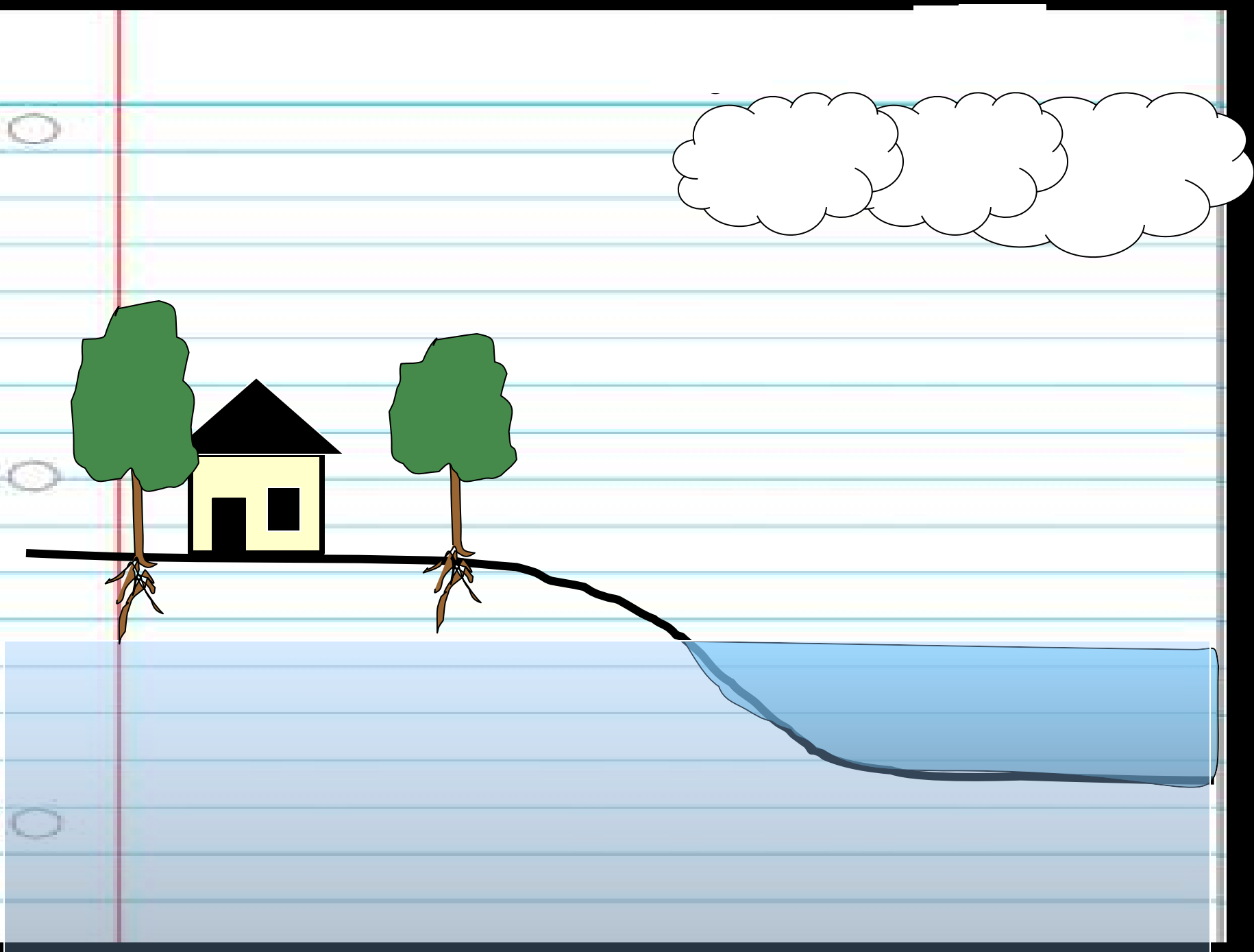


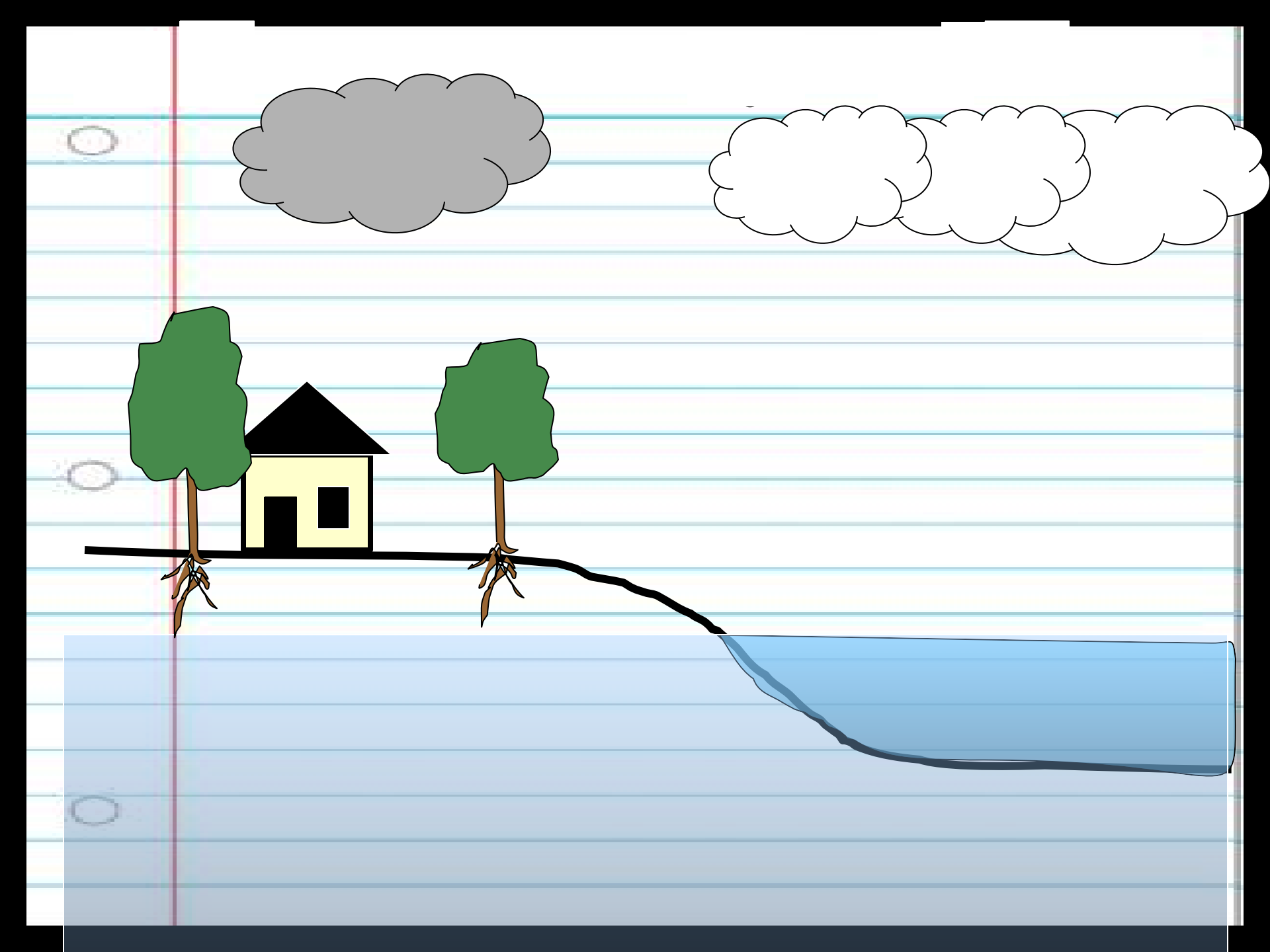


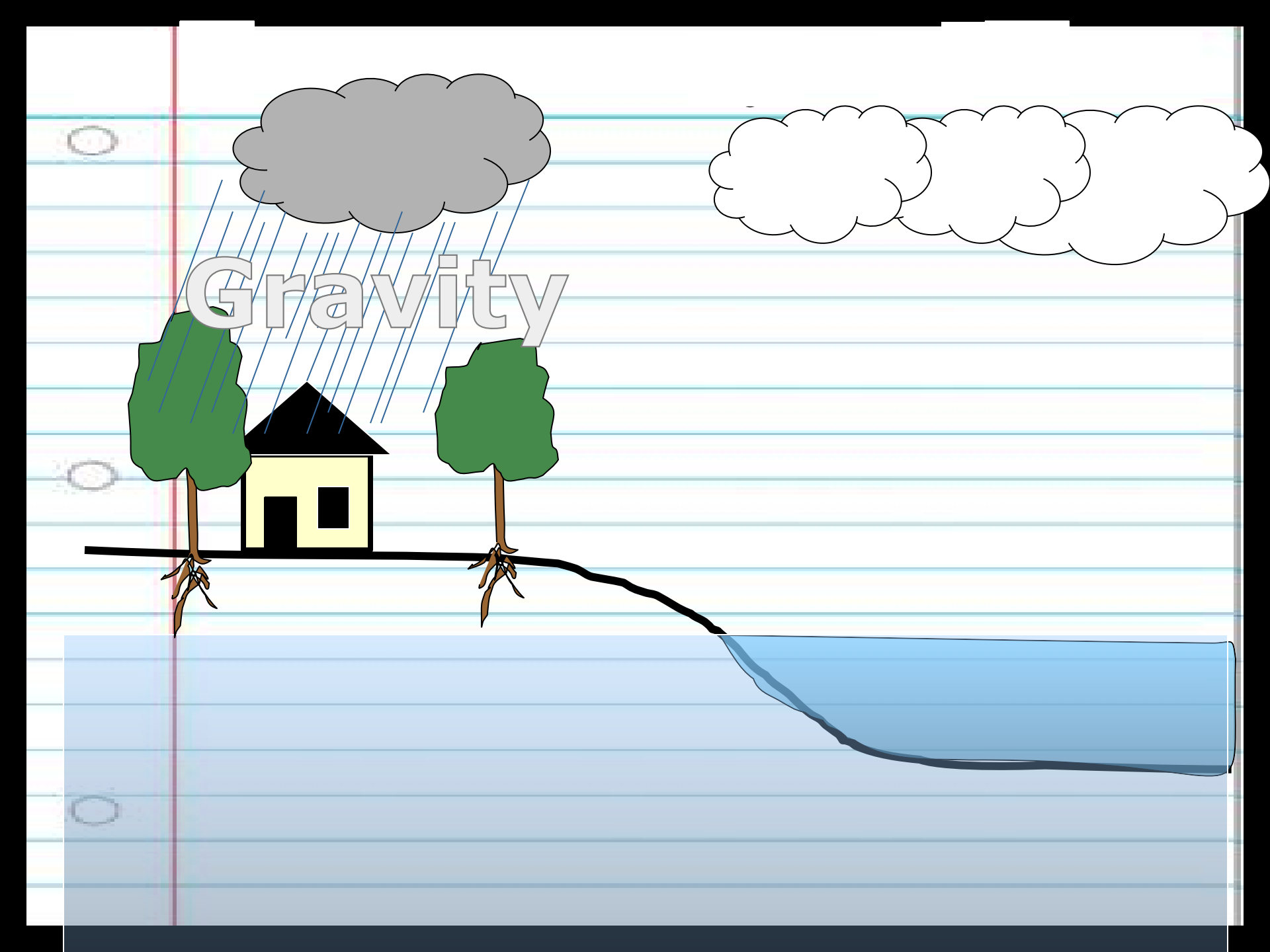


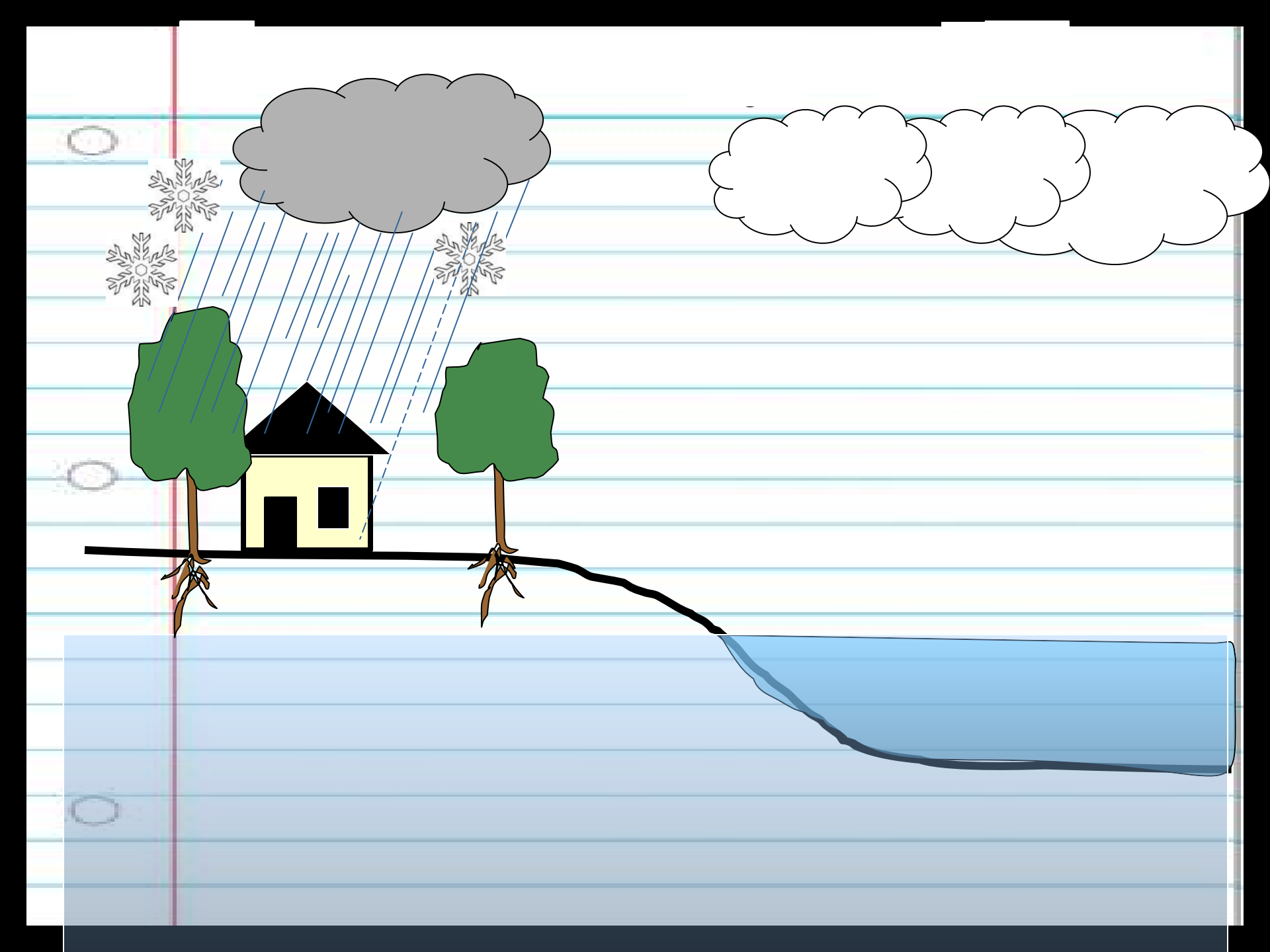


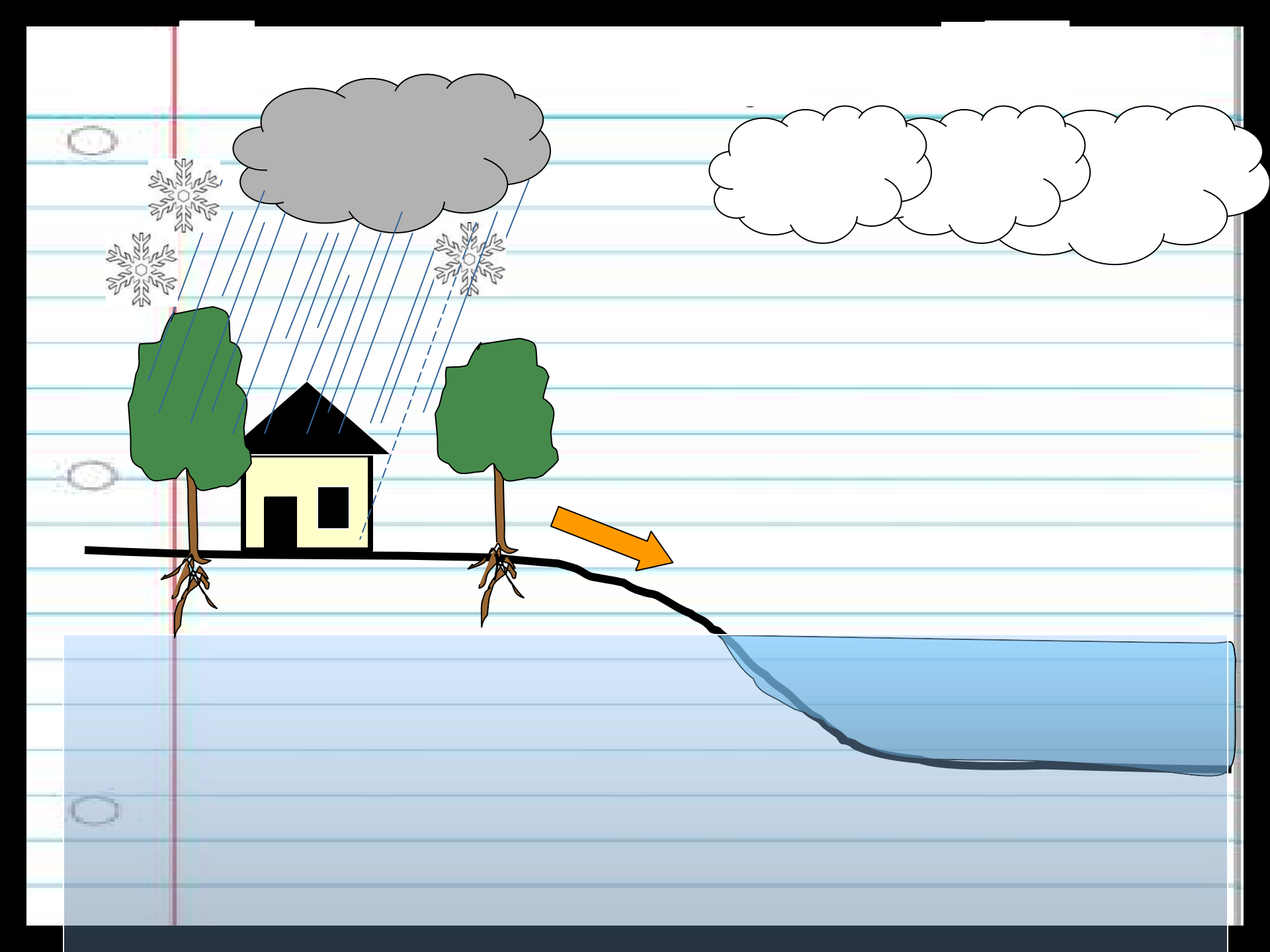


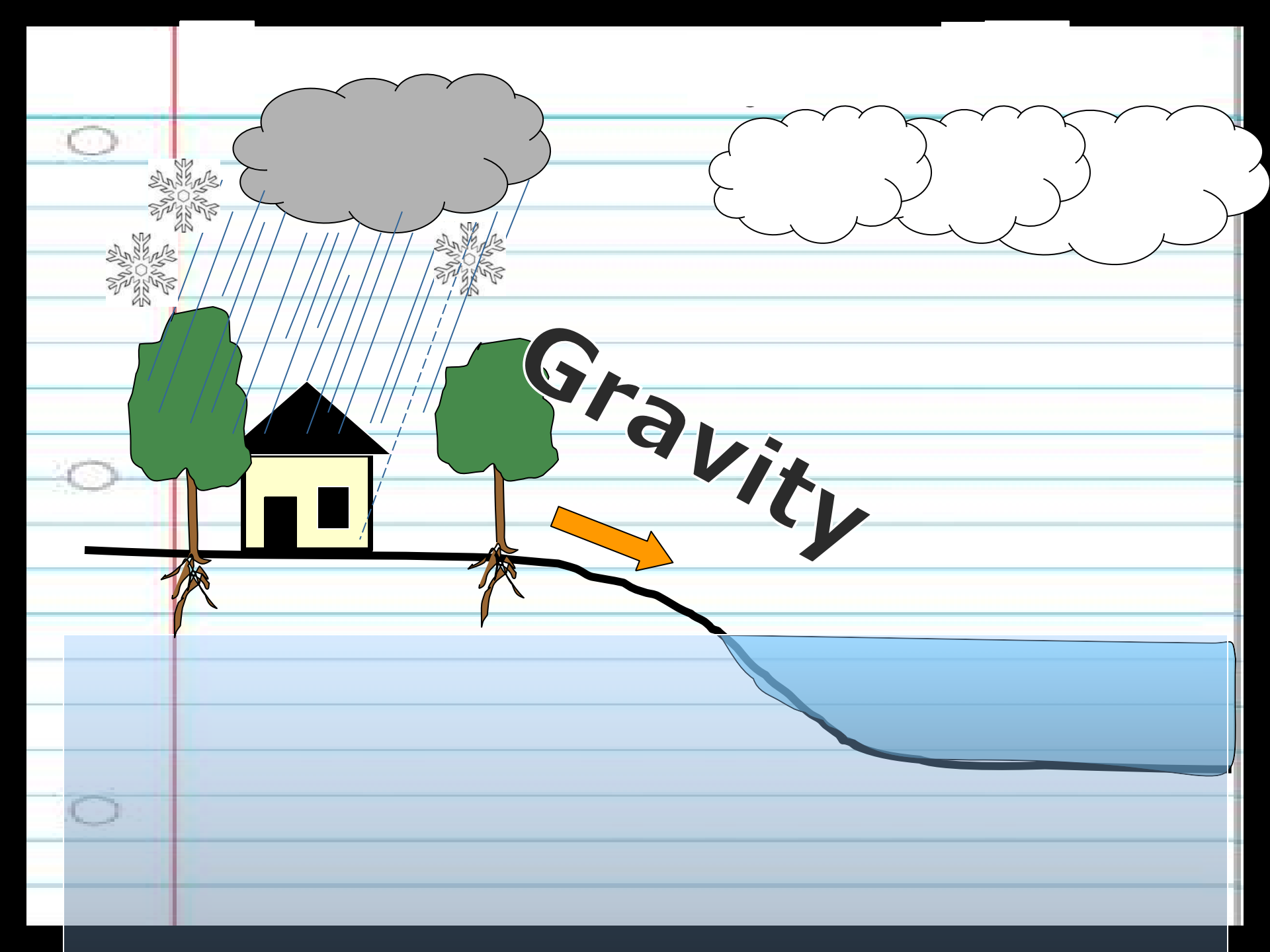





Gravity



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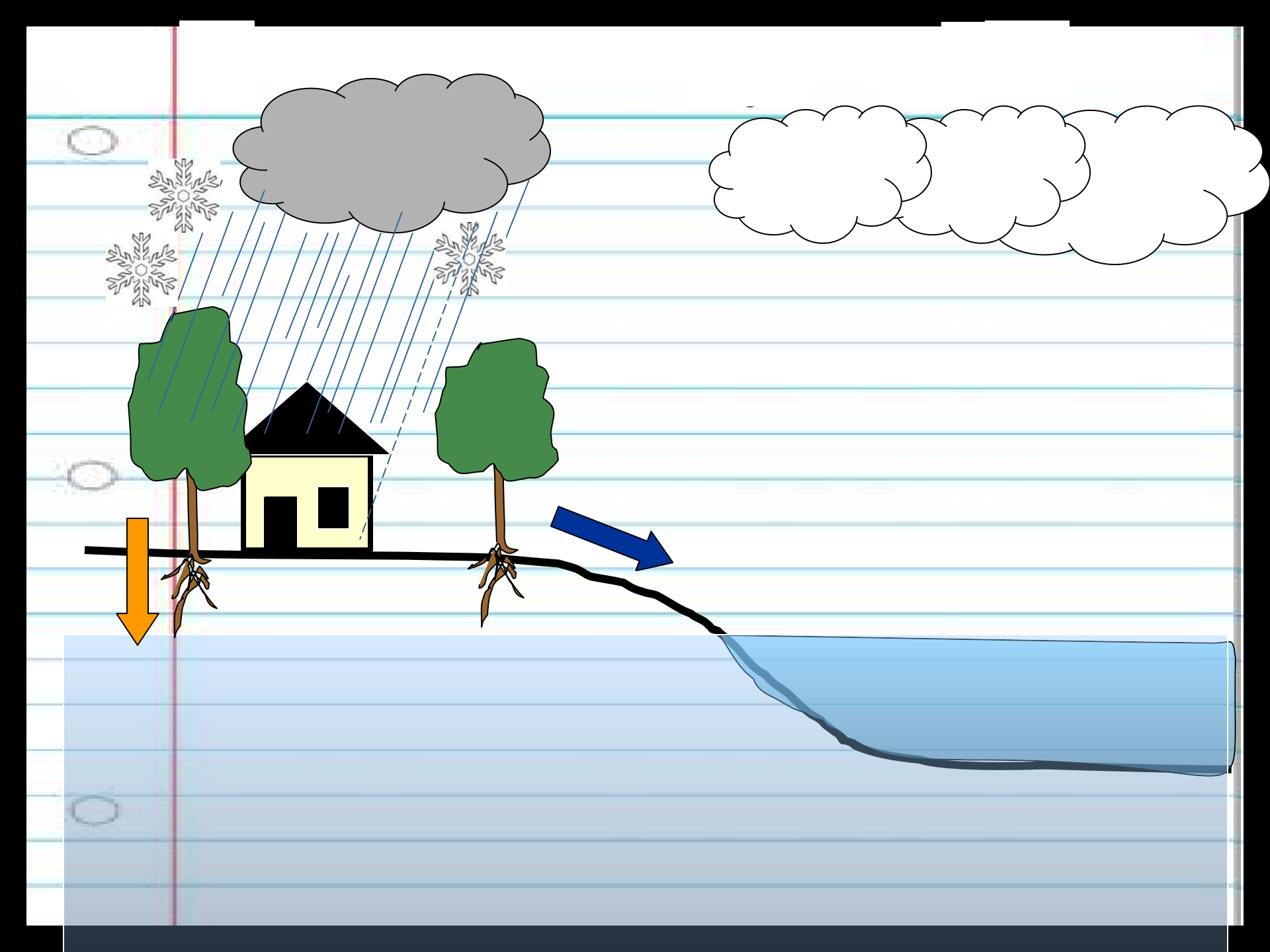
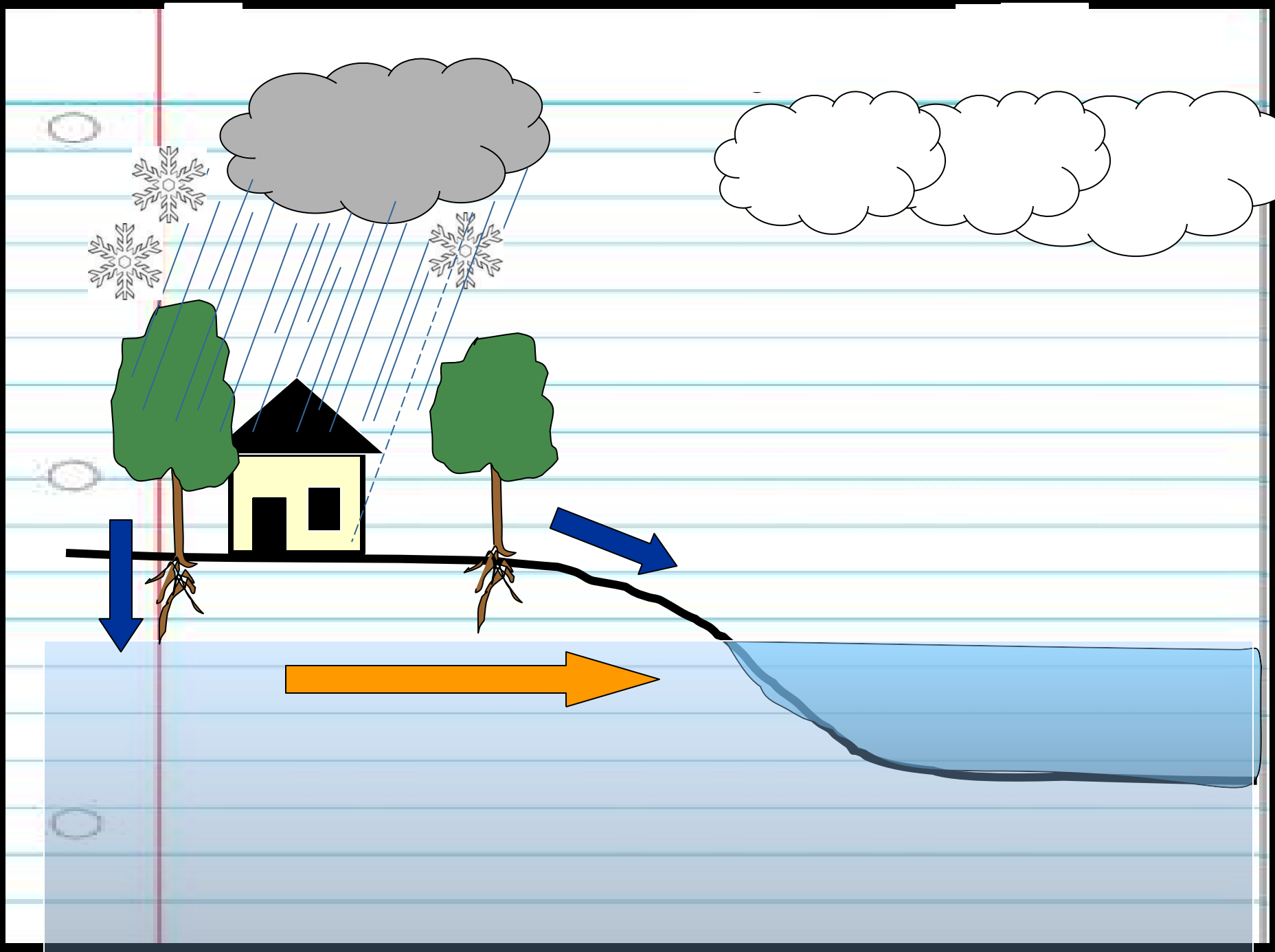
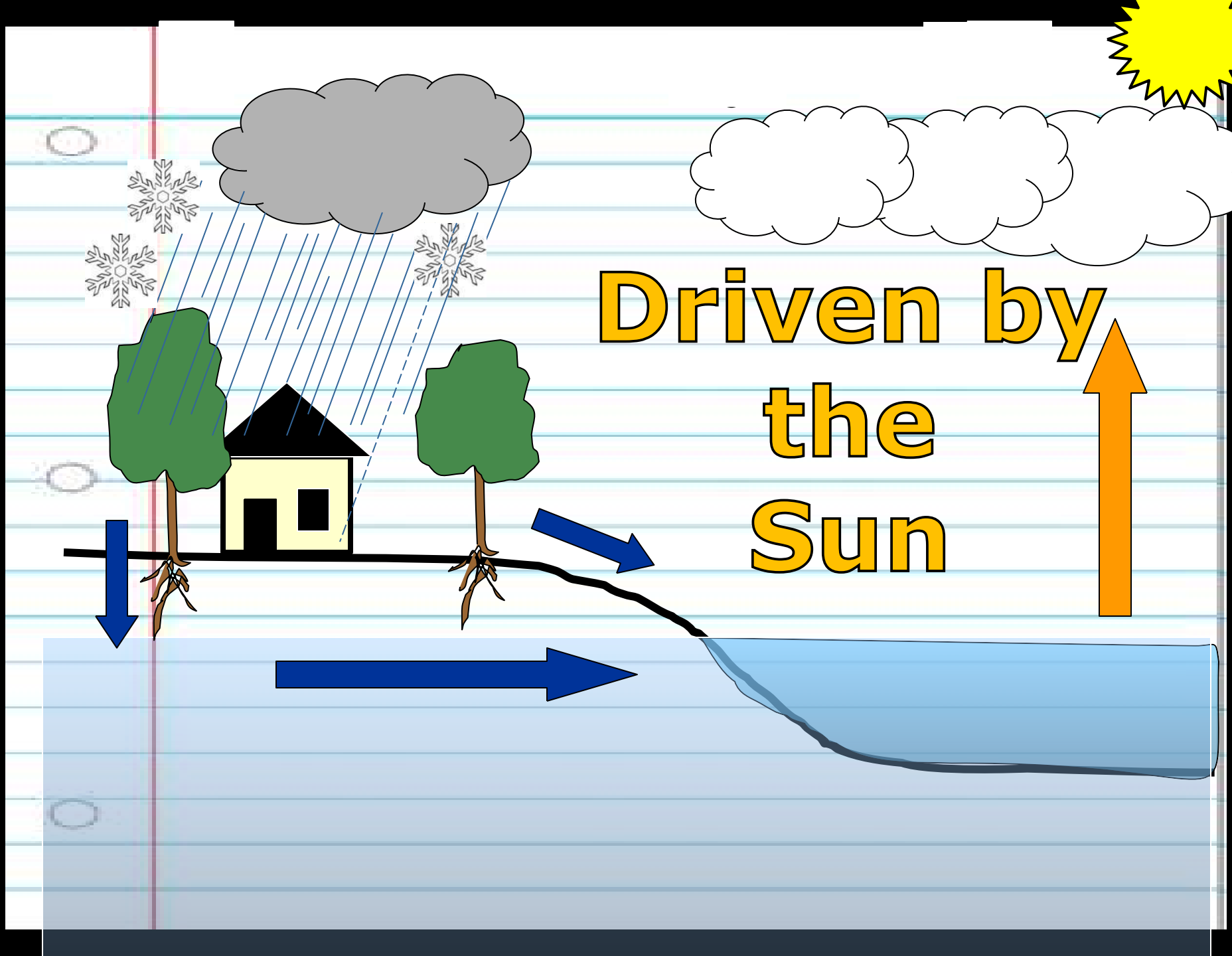
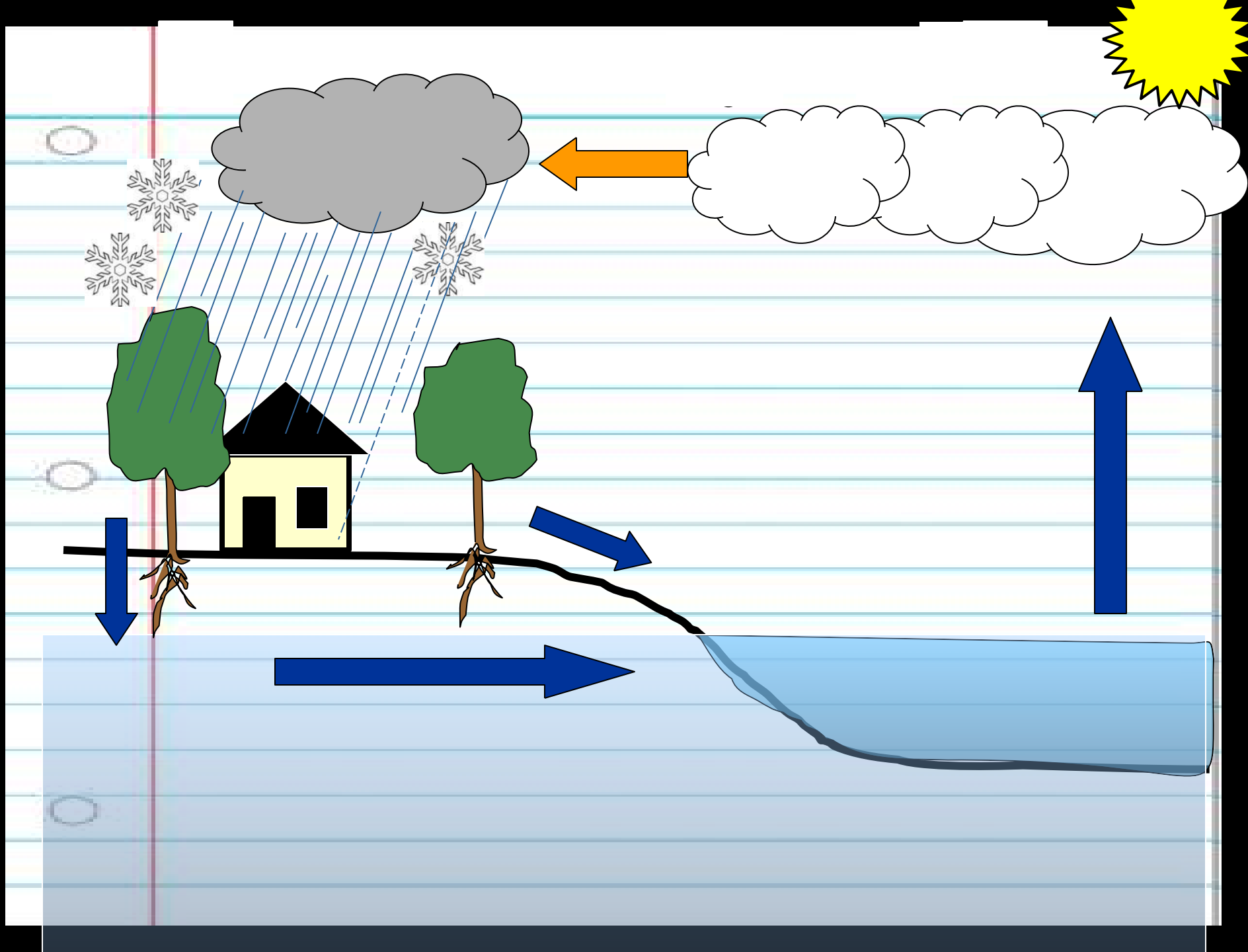
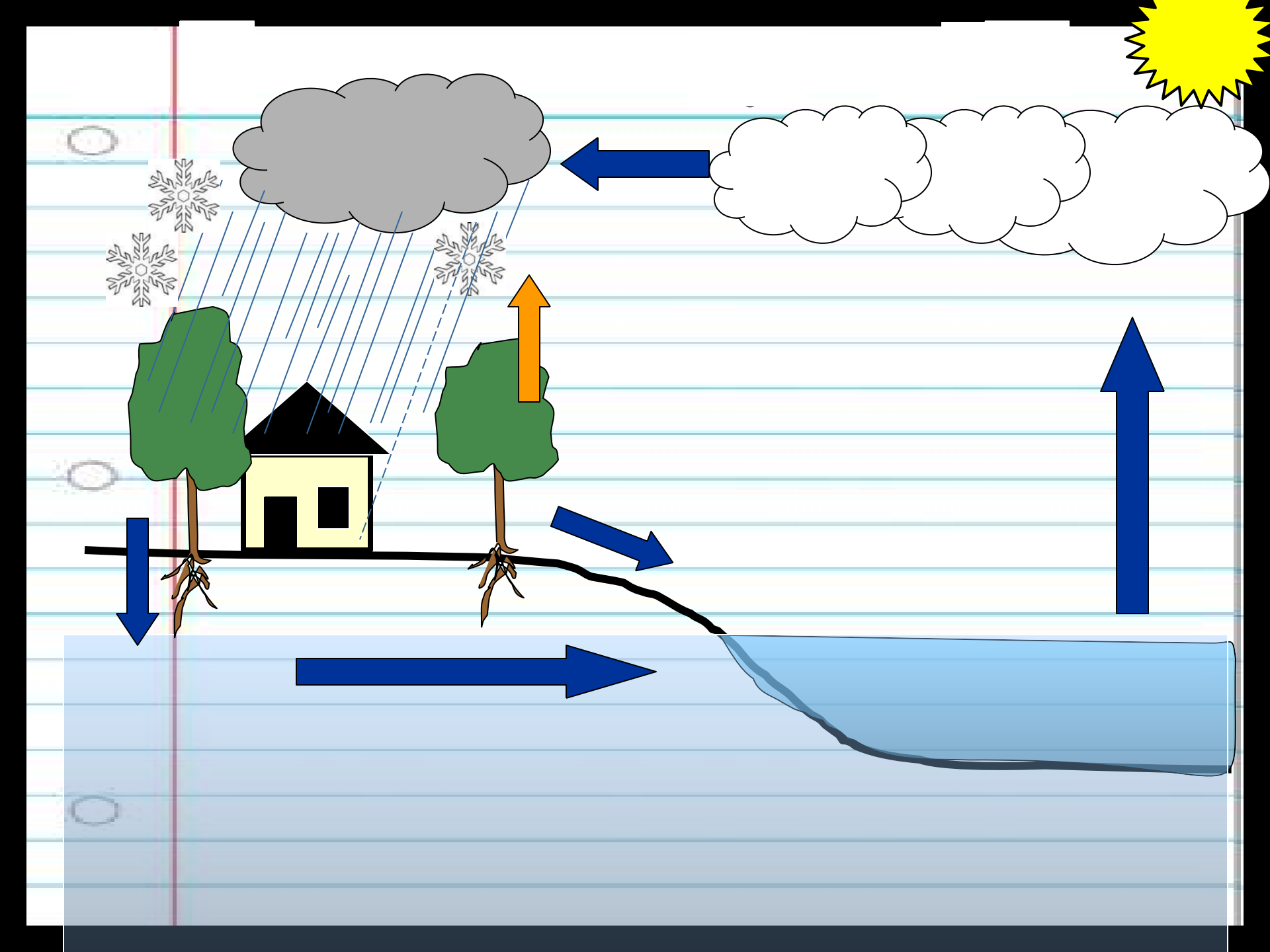
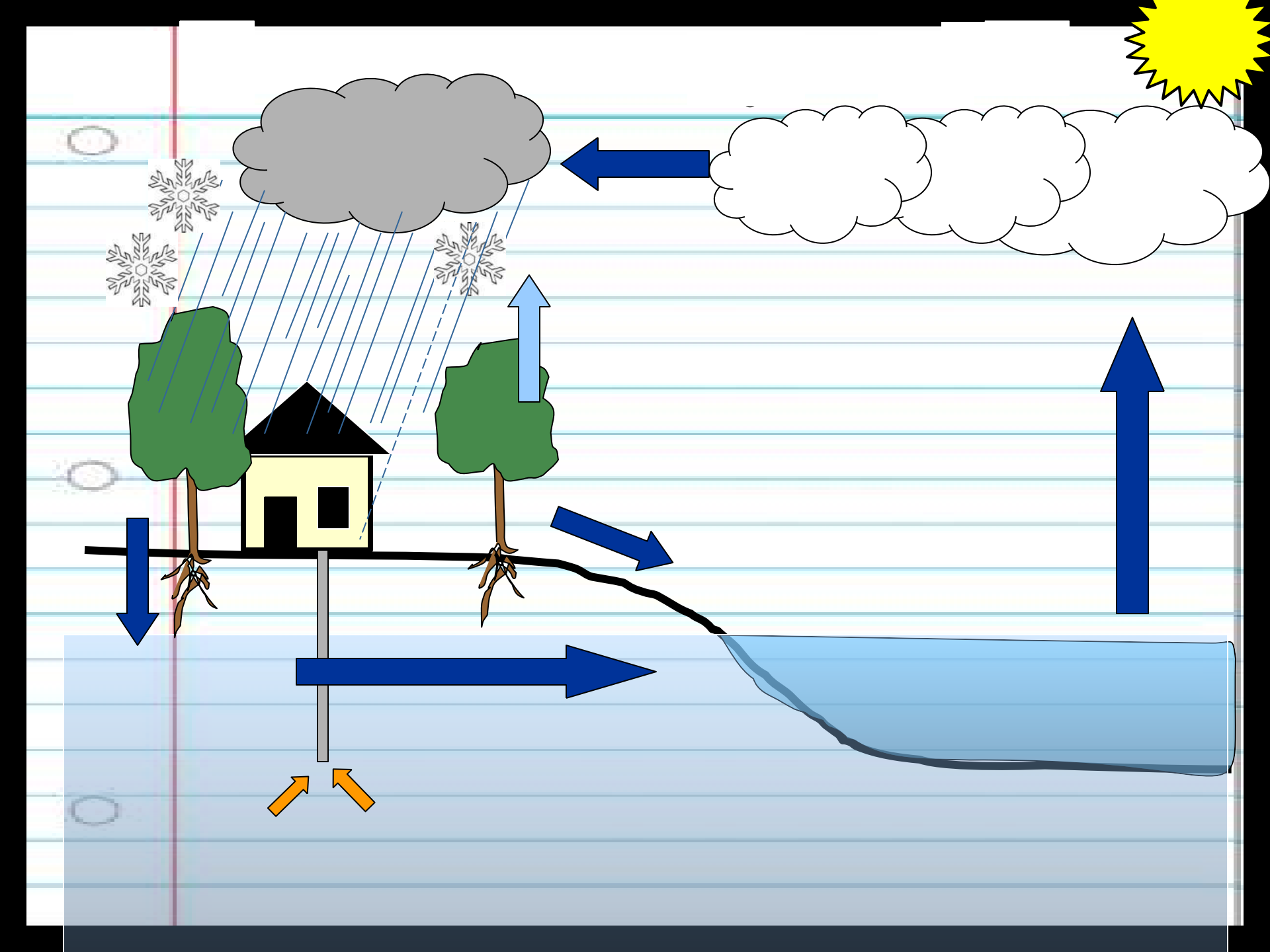


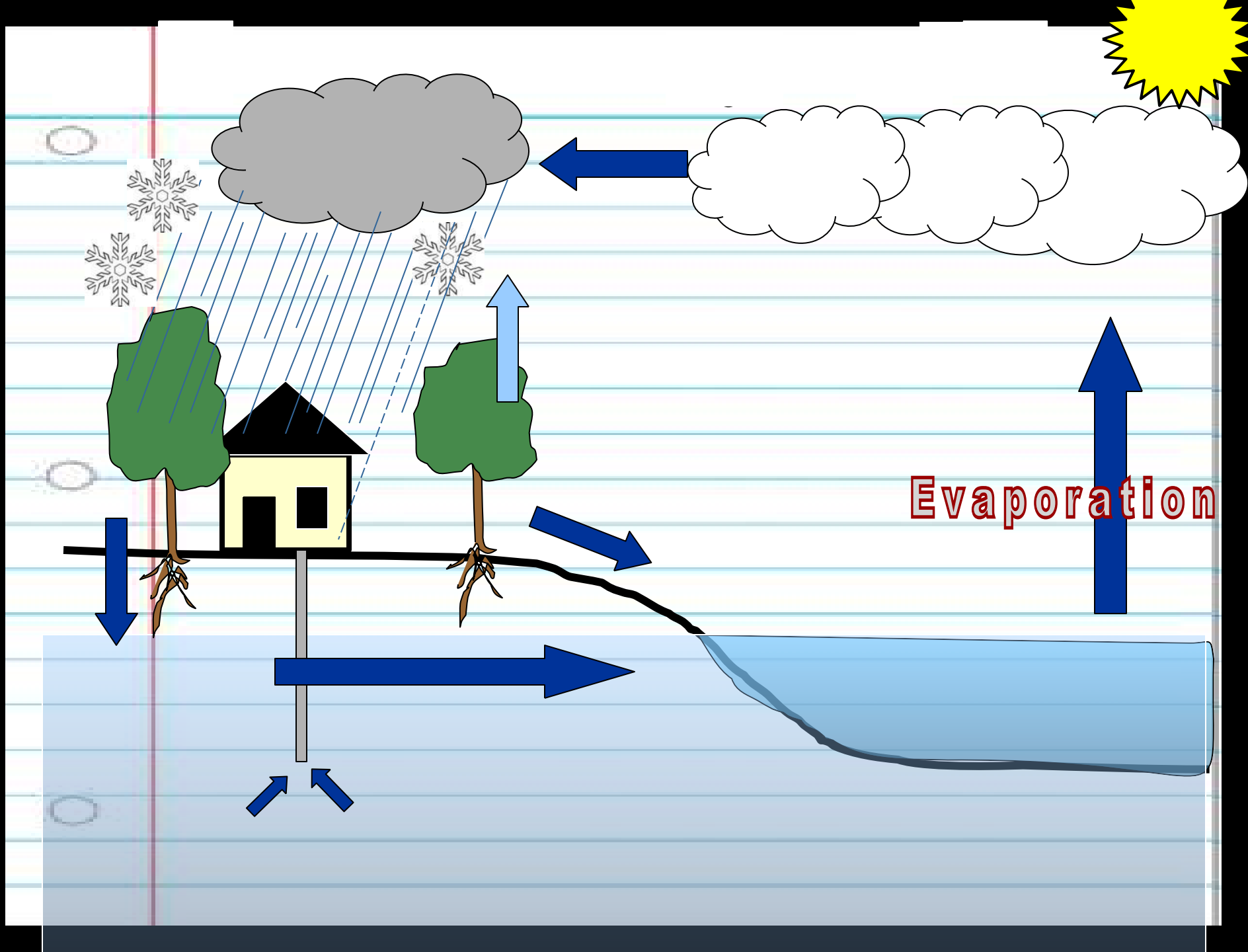


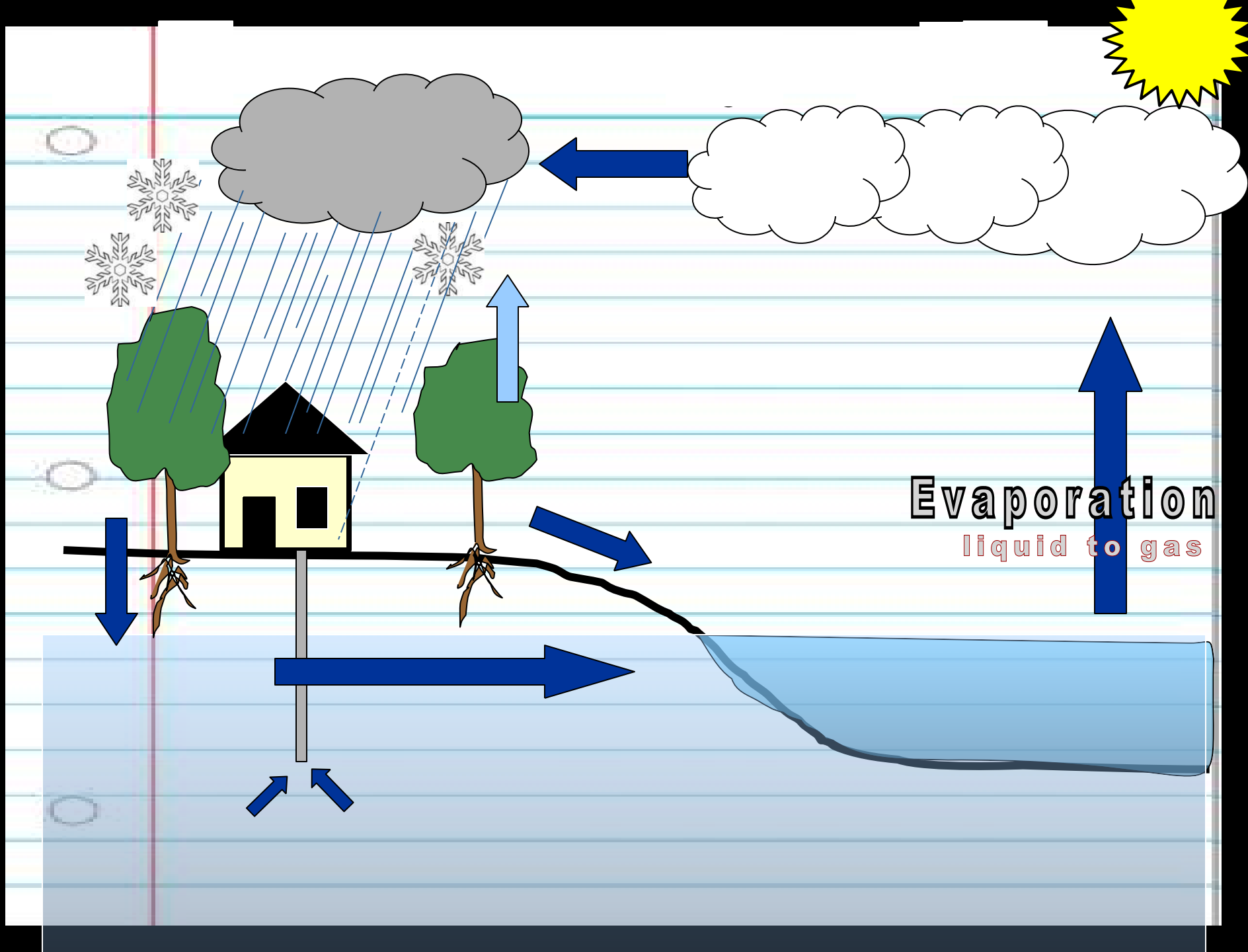

Driven by the Sun

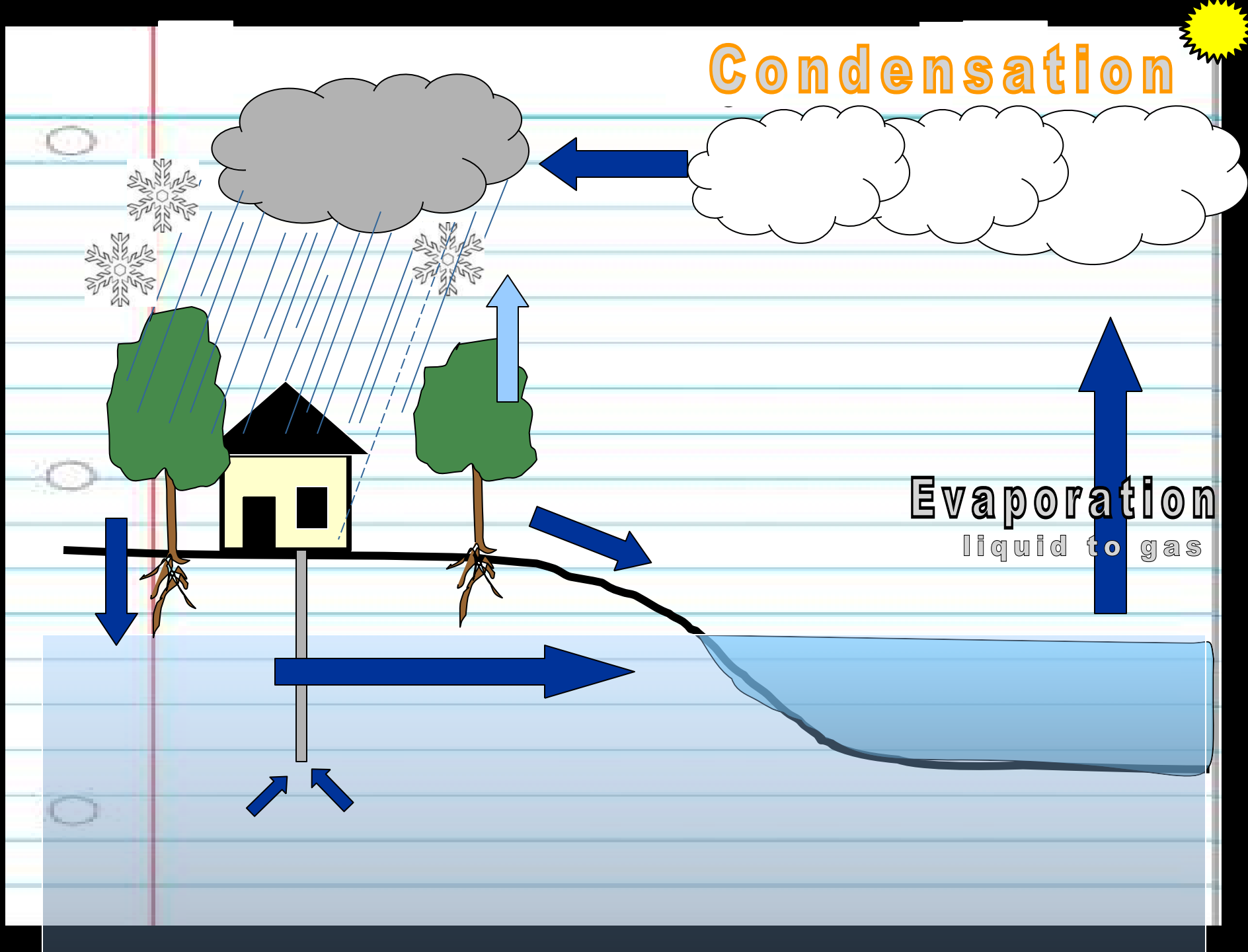


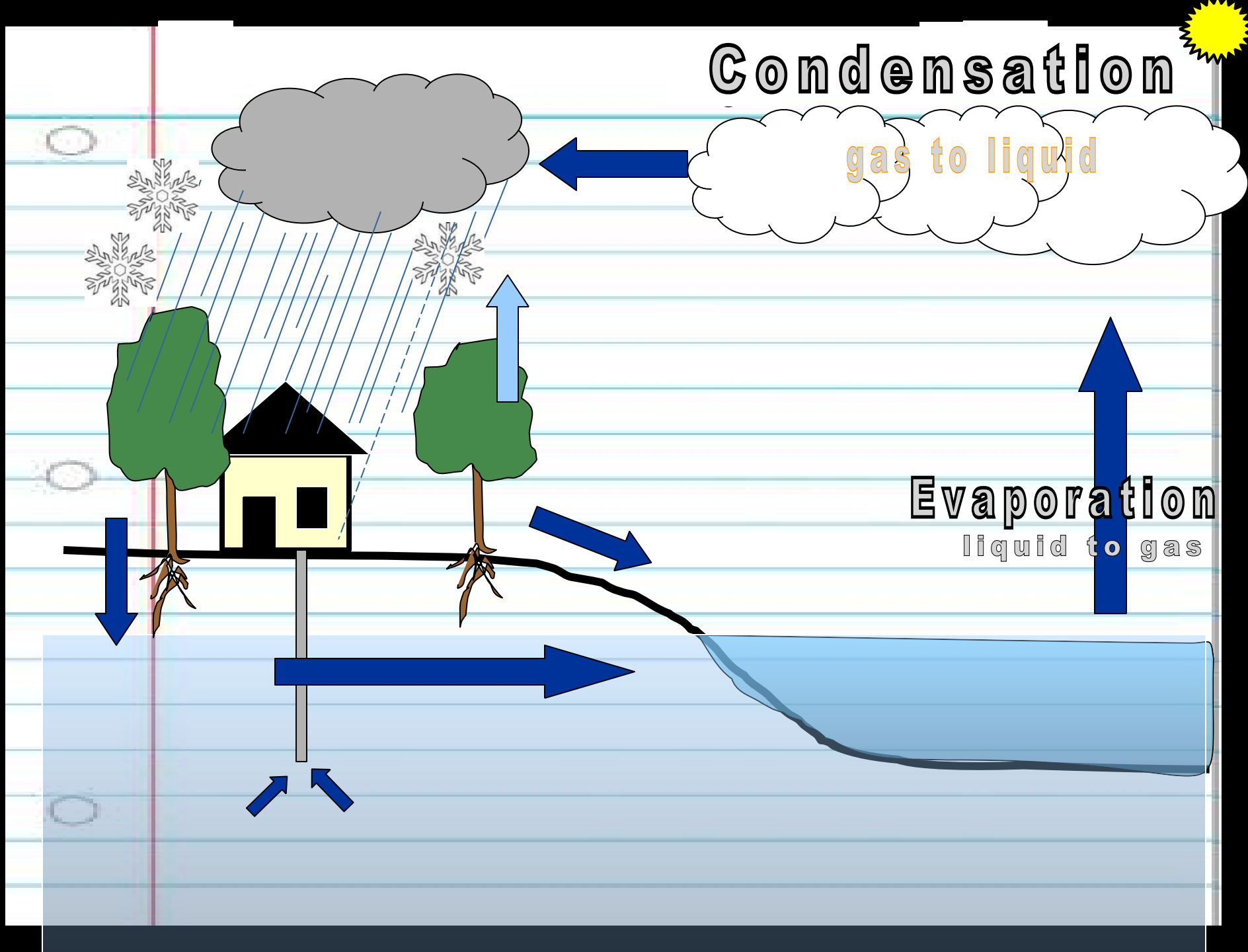


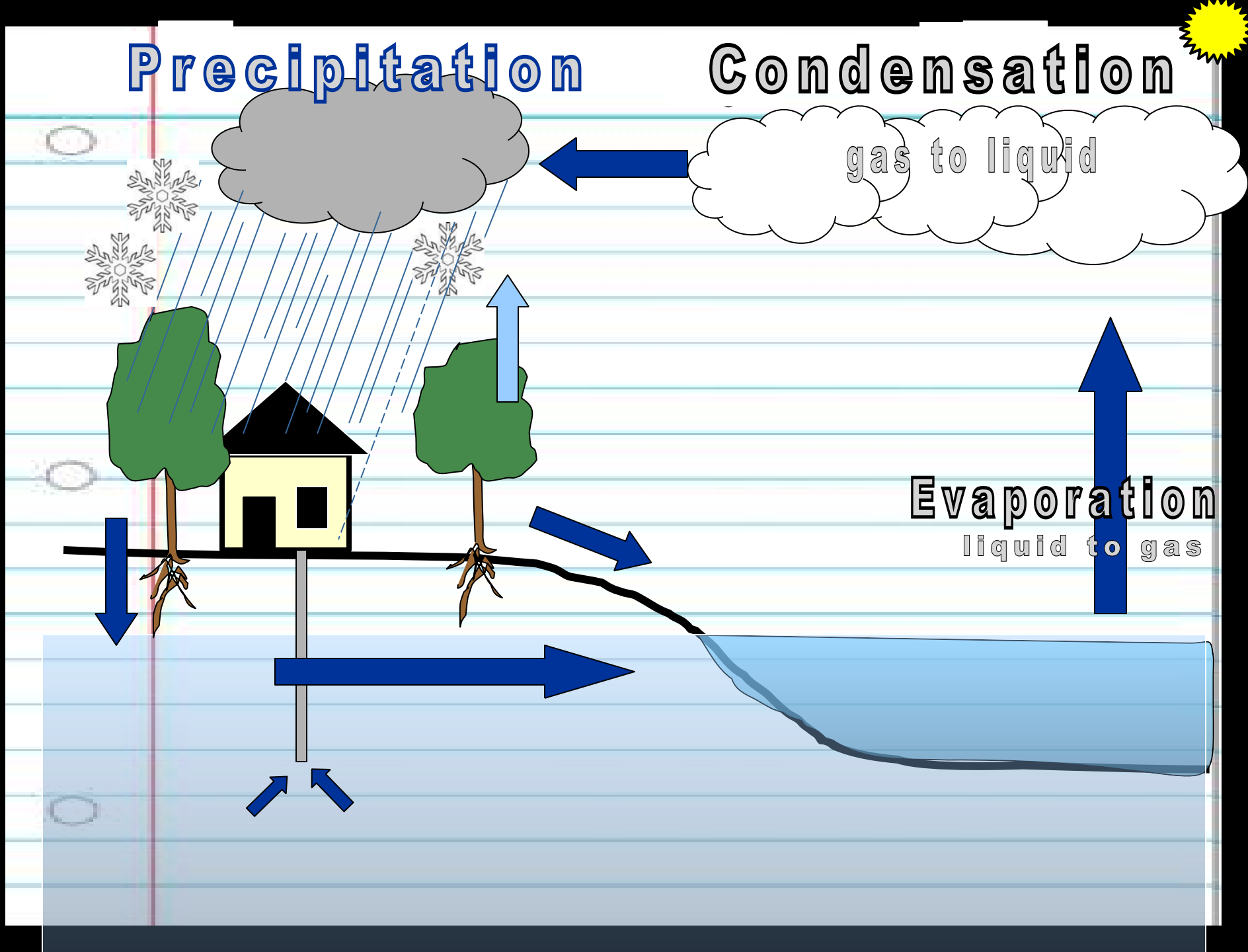


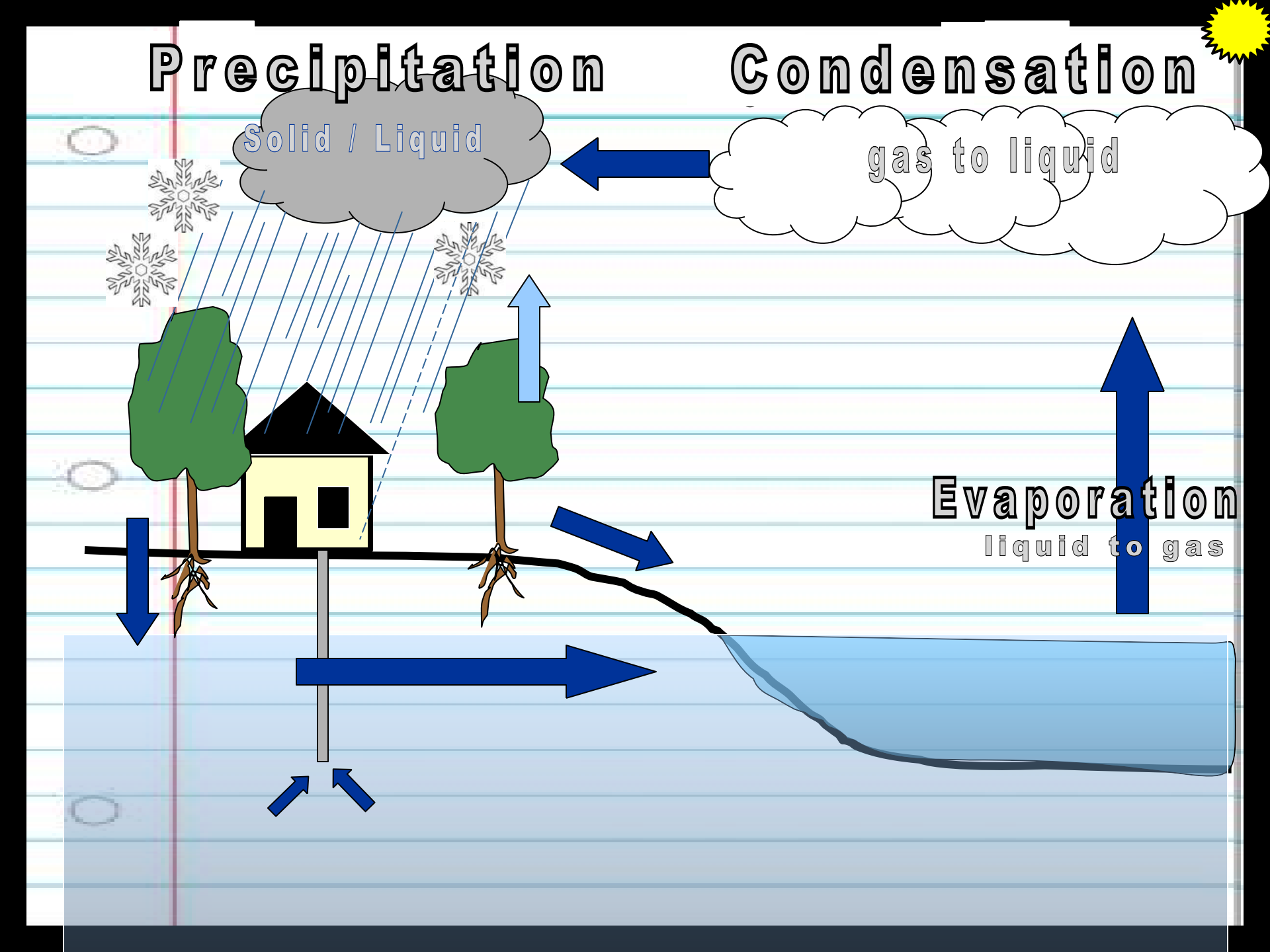

Evaporation

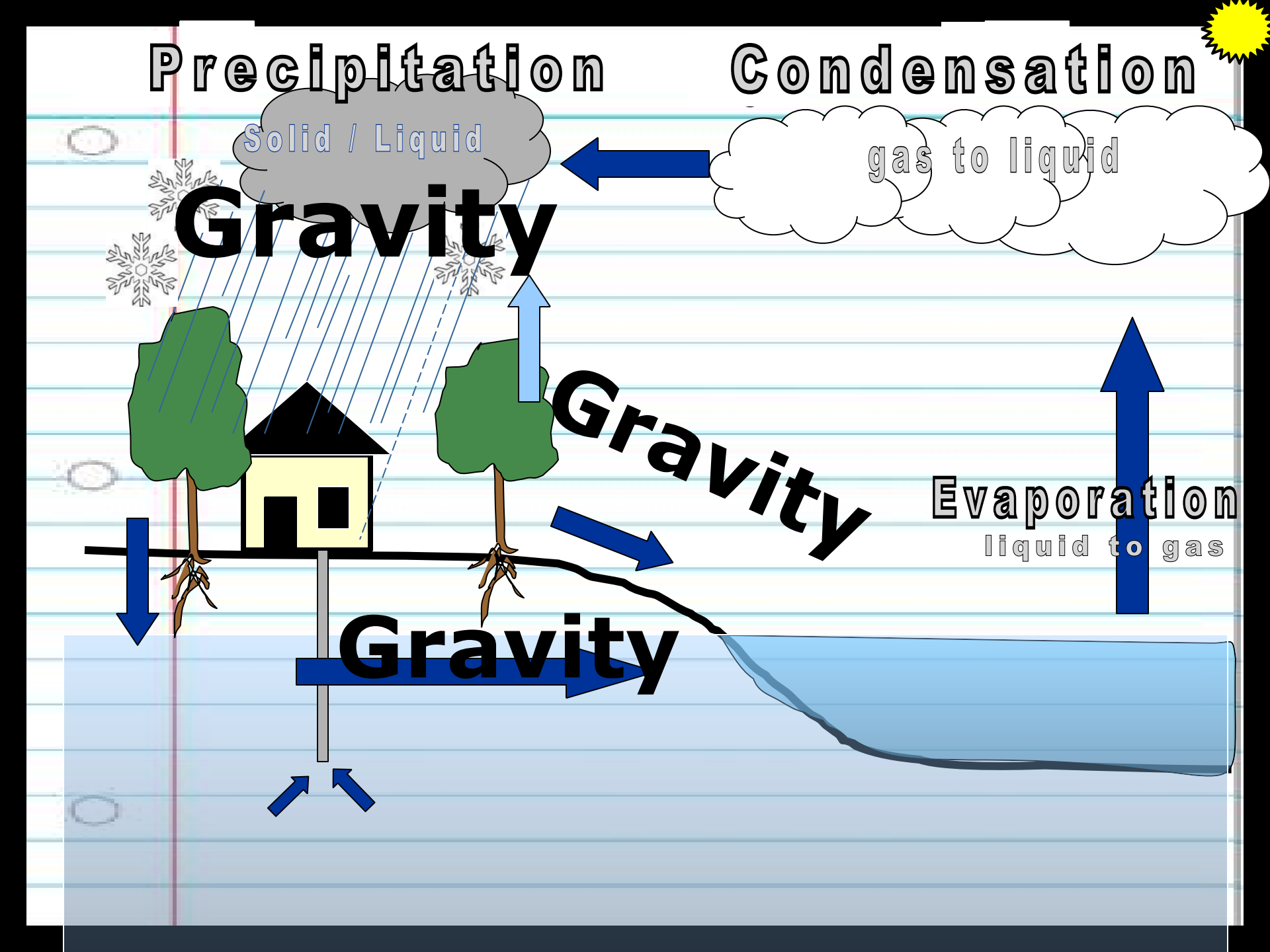

Evaporation
liquid to gas

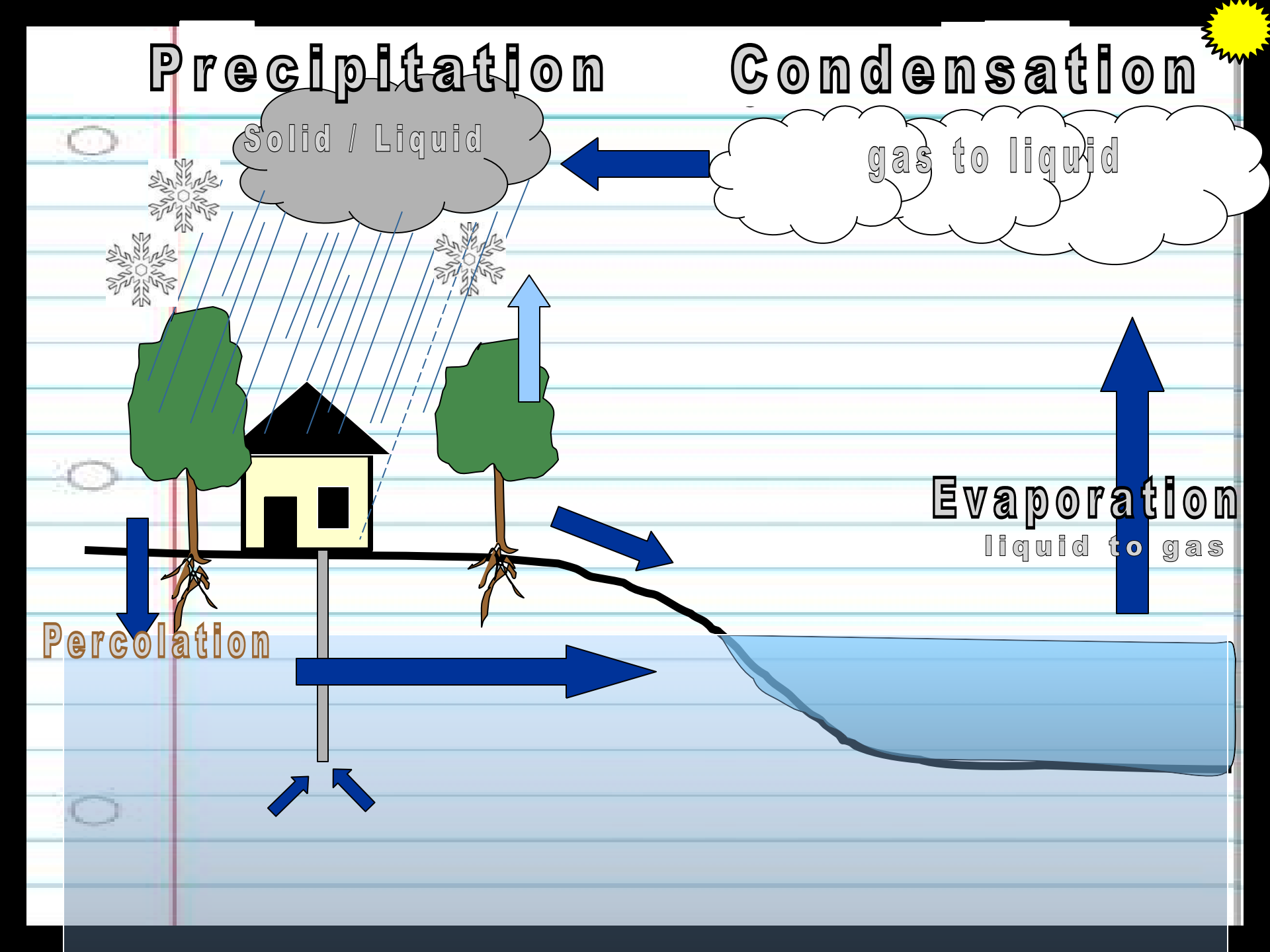

Condensation
Evaporation
liquid to gas

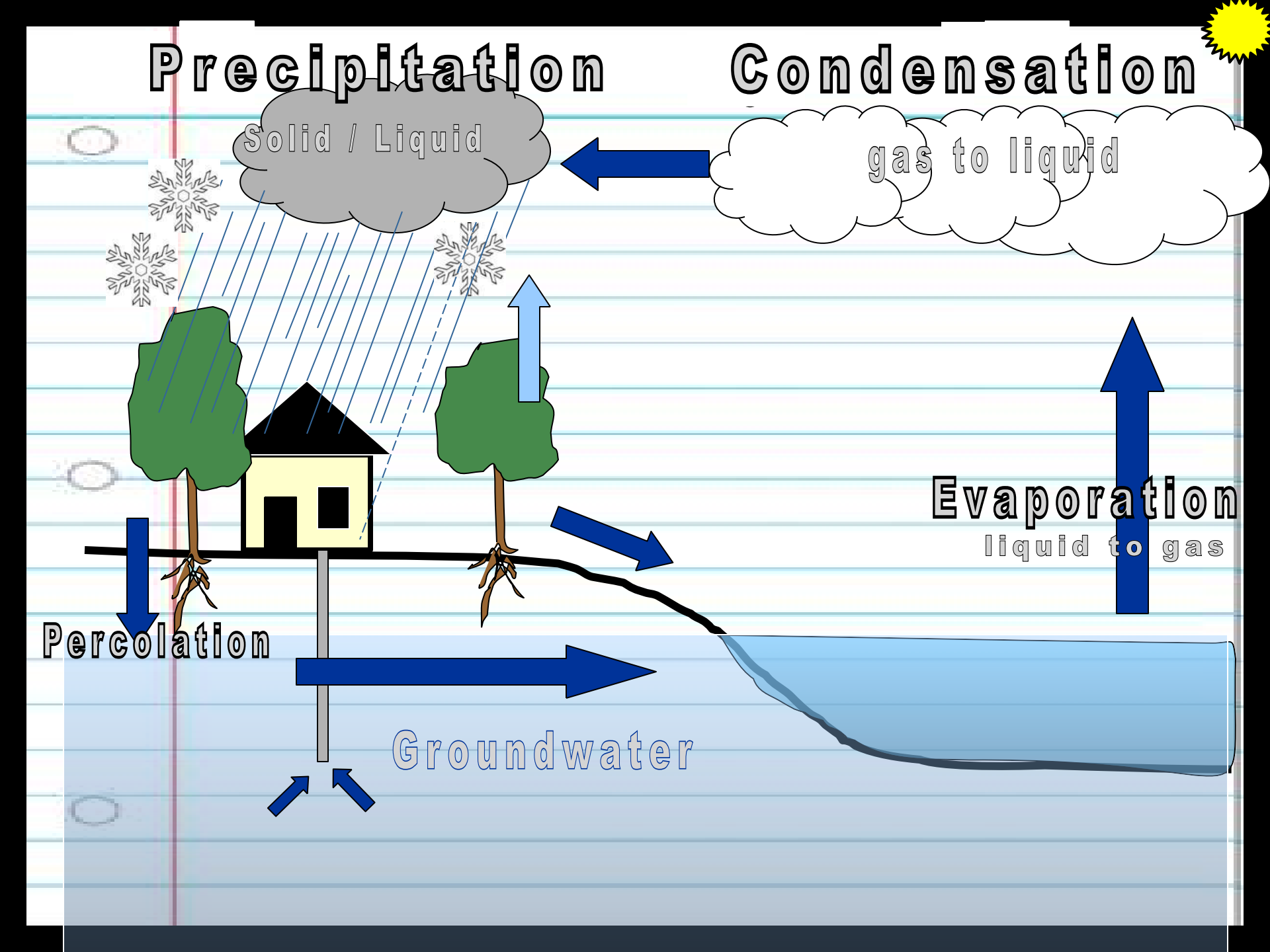

Condensation
gas to liquid
Evaporation
liquid to gas

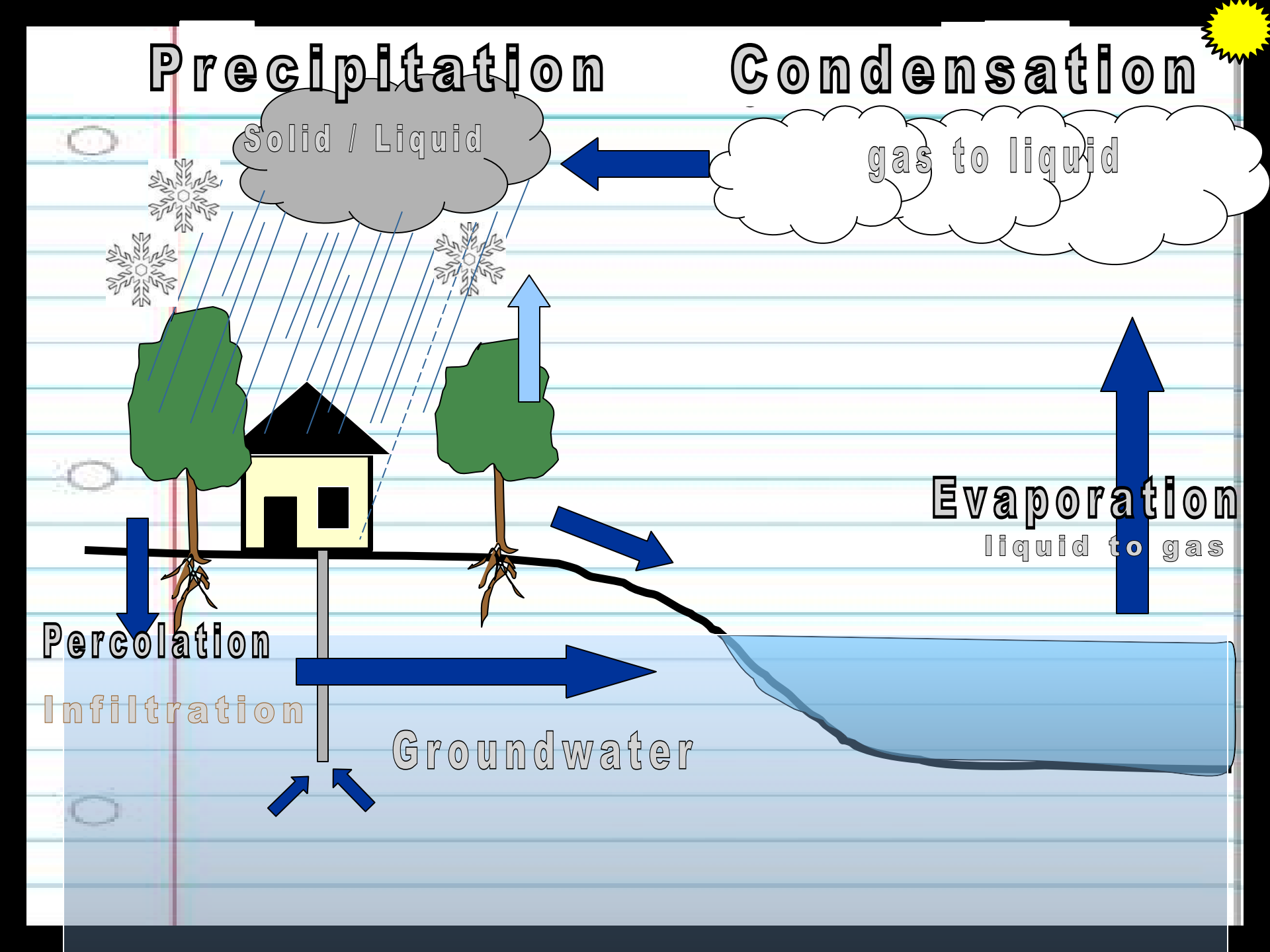

Precipitation
Condensation
gas to liquid
Evaporation
liquid to gas


Precipitation
Solid / Liquid
Condensation
gas to liquid
Evaporation
liquid to gas


Precipitation
Solid / Liquid
Condensation
gas to liquid
Gravity
Gravity
Gravity
Evaporation
liquid to gas


Precipitation
Solid / Liquid
Condensation
gas to liquid
Evaporation
liquid to gas
Percolation


Precipitation
Solid / Liquid
Condensation
gas to liquid
Evaporation
liquid to gas
Percolation
Groundwater


Precipitation
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gas to liquid
Evaporation
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Infiltration
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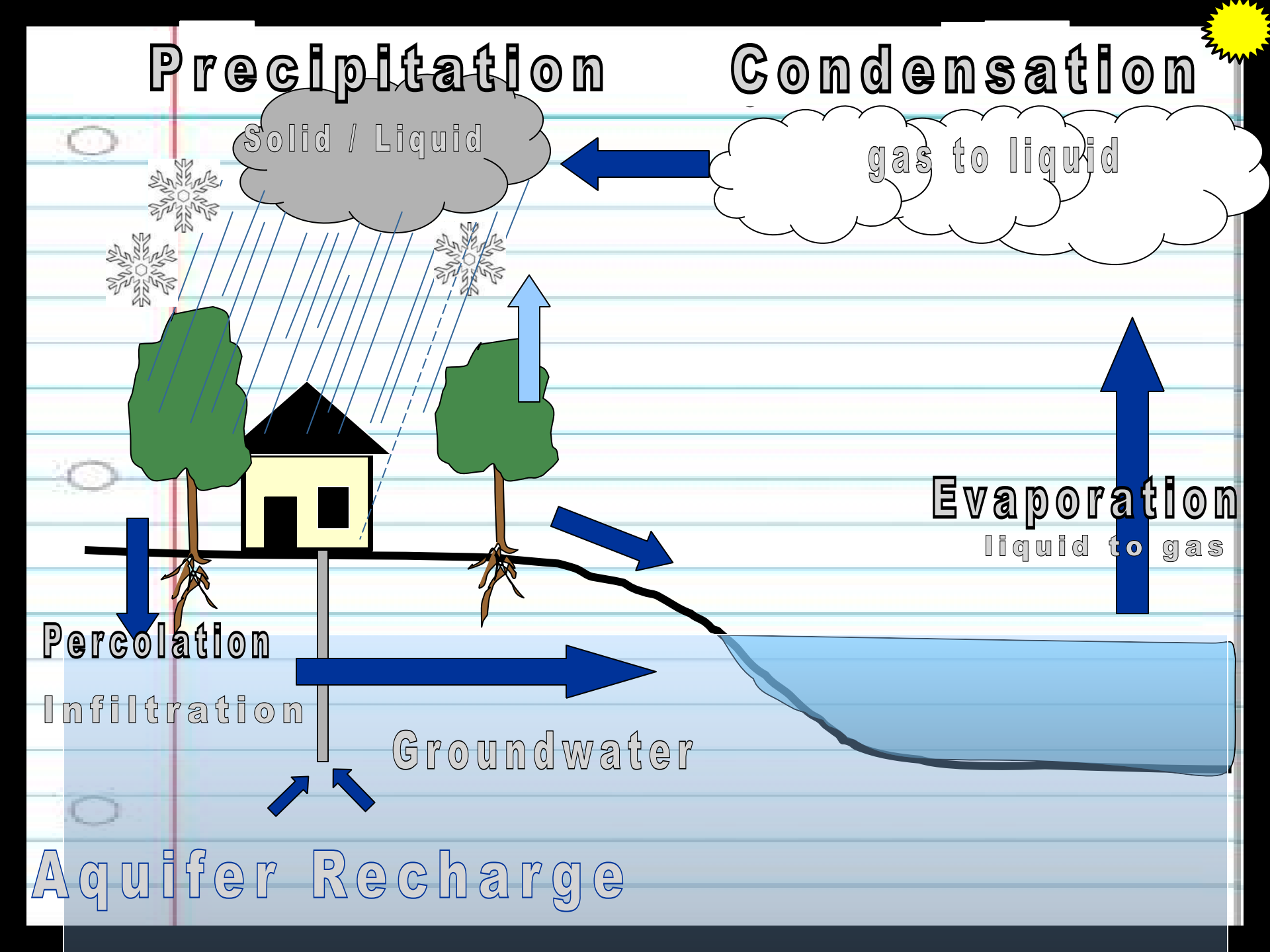
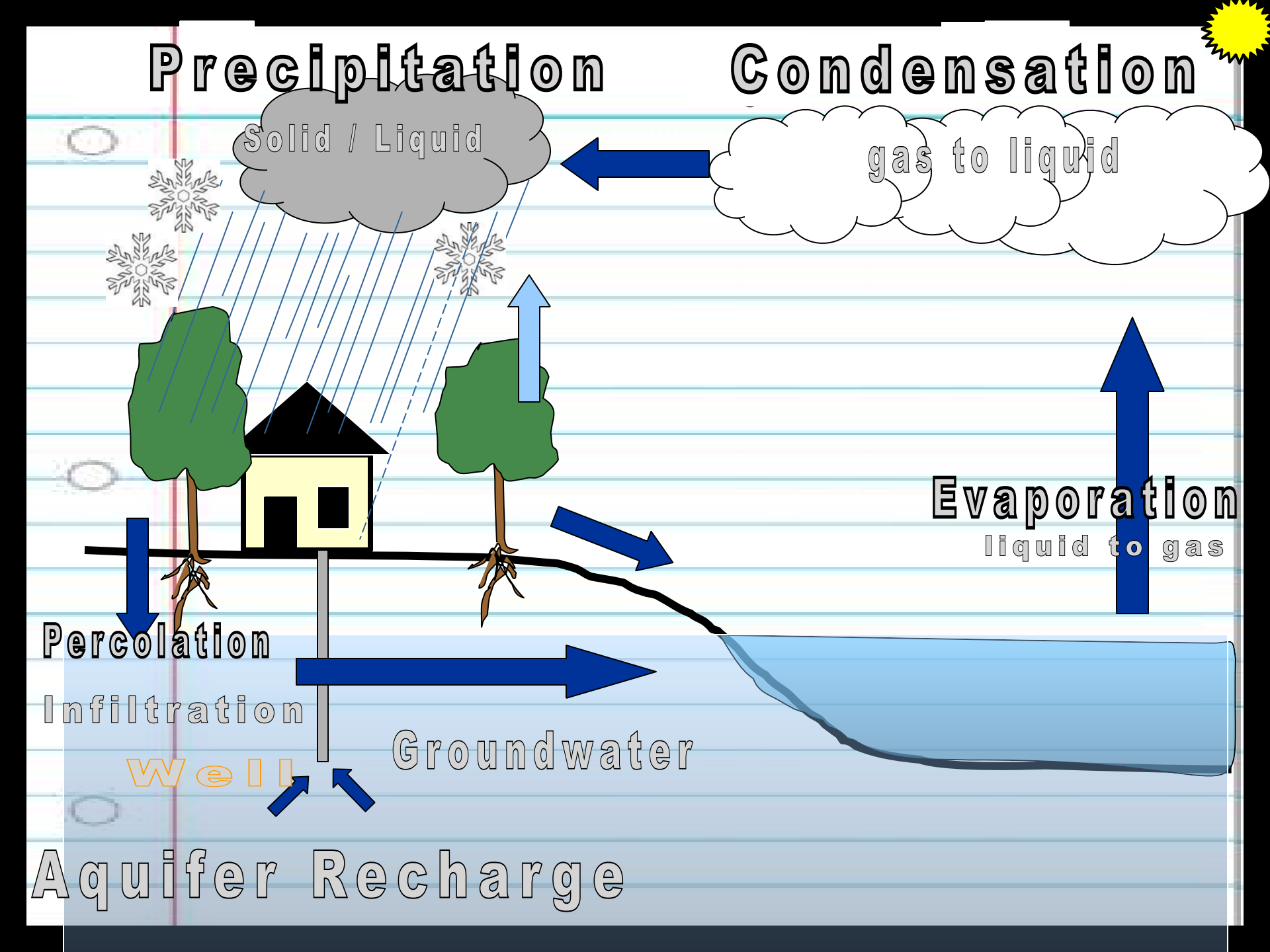

Precipitation
Solid / Liquid
Condensation
gas to liquid
Evaporation
liquid to gas
Percolation
Infiltration
Groundwater
Aquifer Recharge


Precipitation
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Percolation
Infiltration
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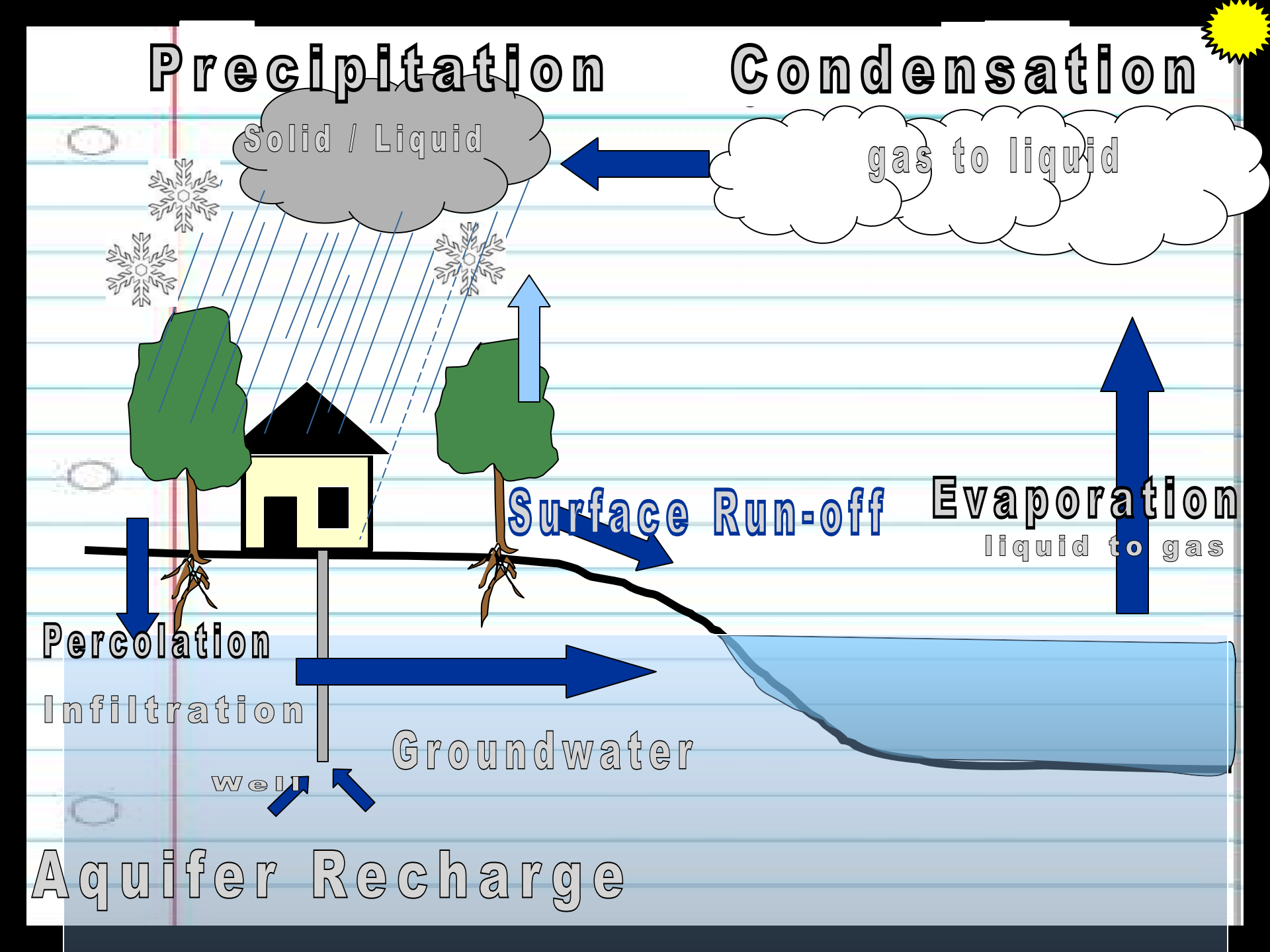
Precipitation
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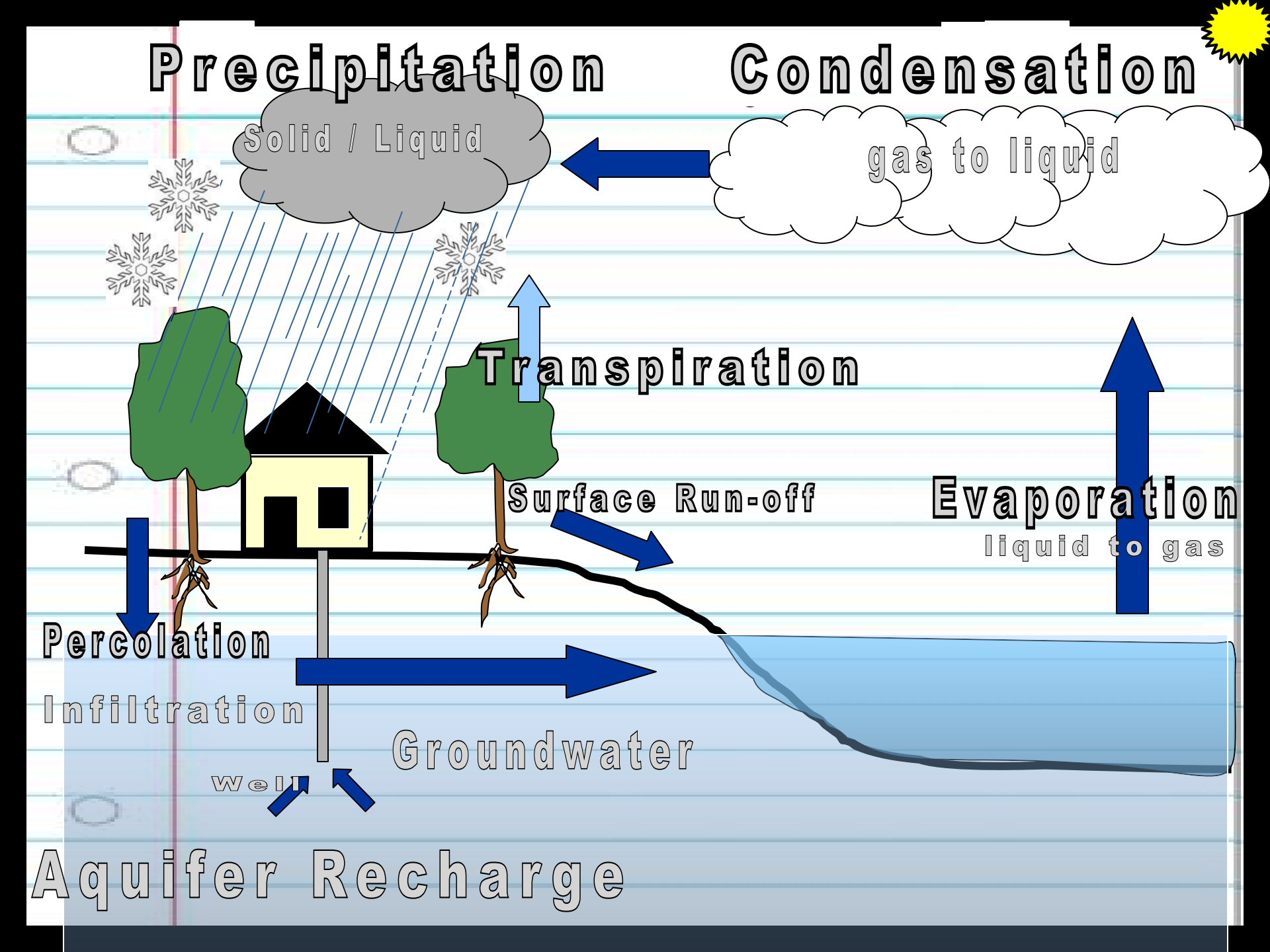
Condensation
gas to liquid
Surface Run-off
Evaporation
liquid to gas
Percolation
Infiltration
Groundwater
Well
Aquifer Recharge


Precipitation
Solid / Liquid
Condensation
gas to liquid
Transpiration
Surface Run-off
Evaporation
liquid to gas
Percolation
Infiltration
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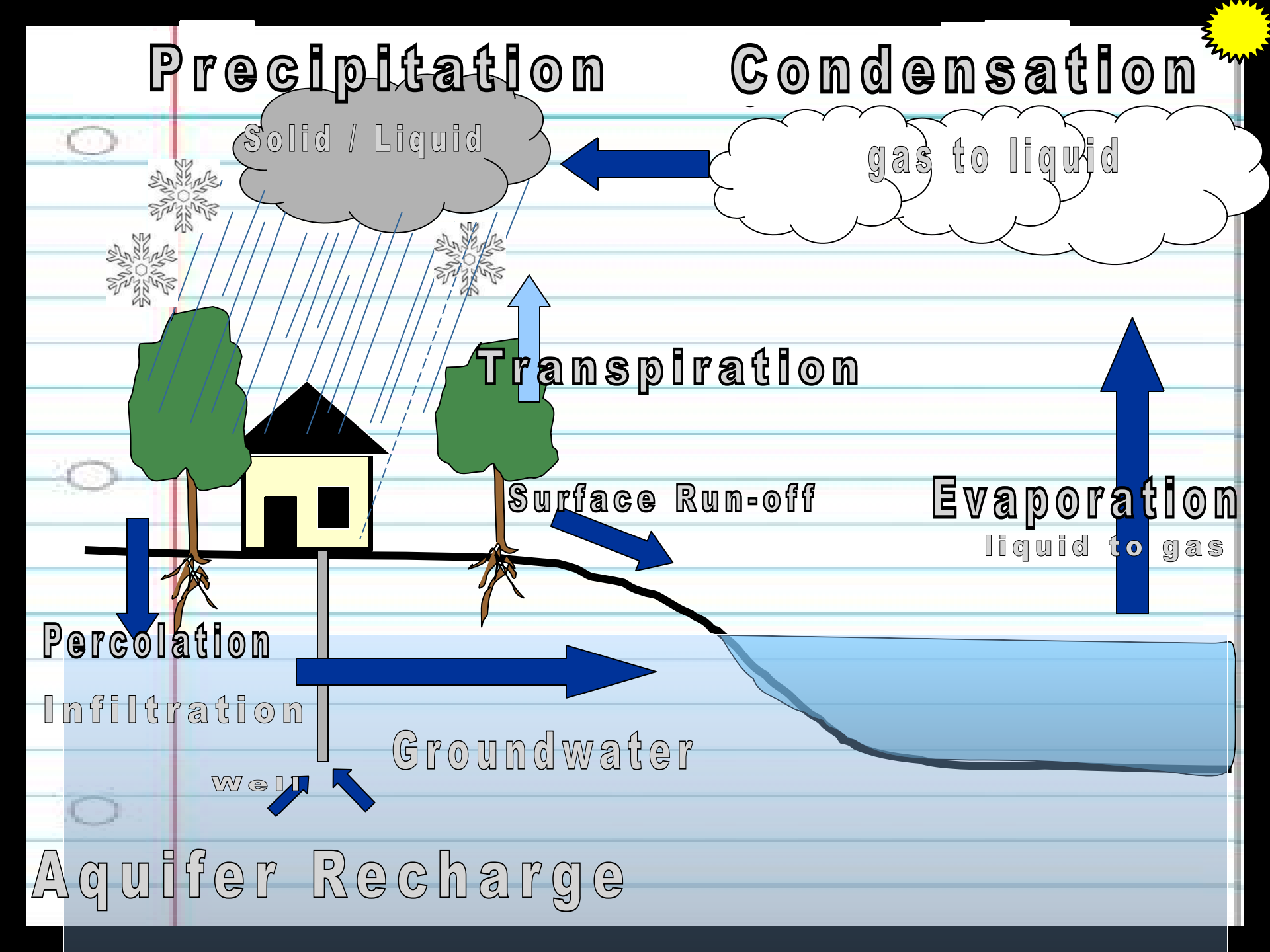
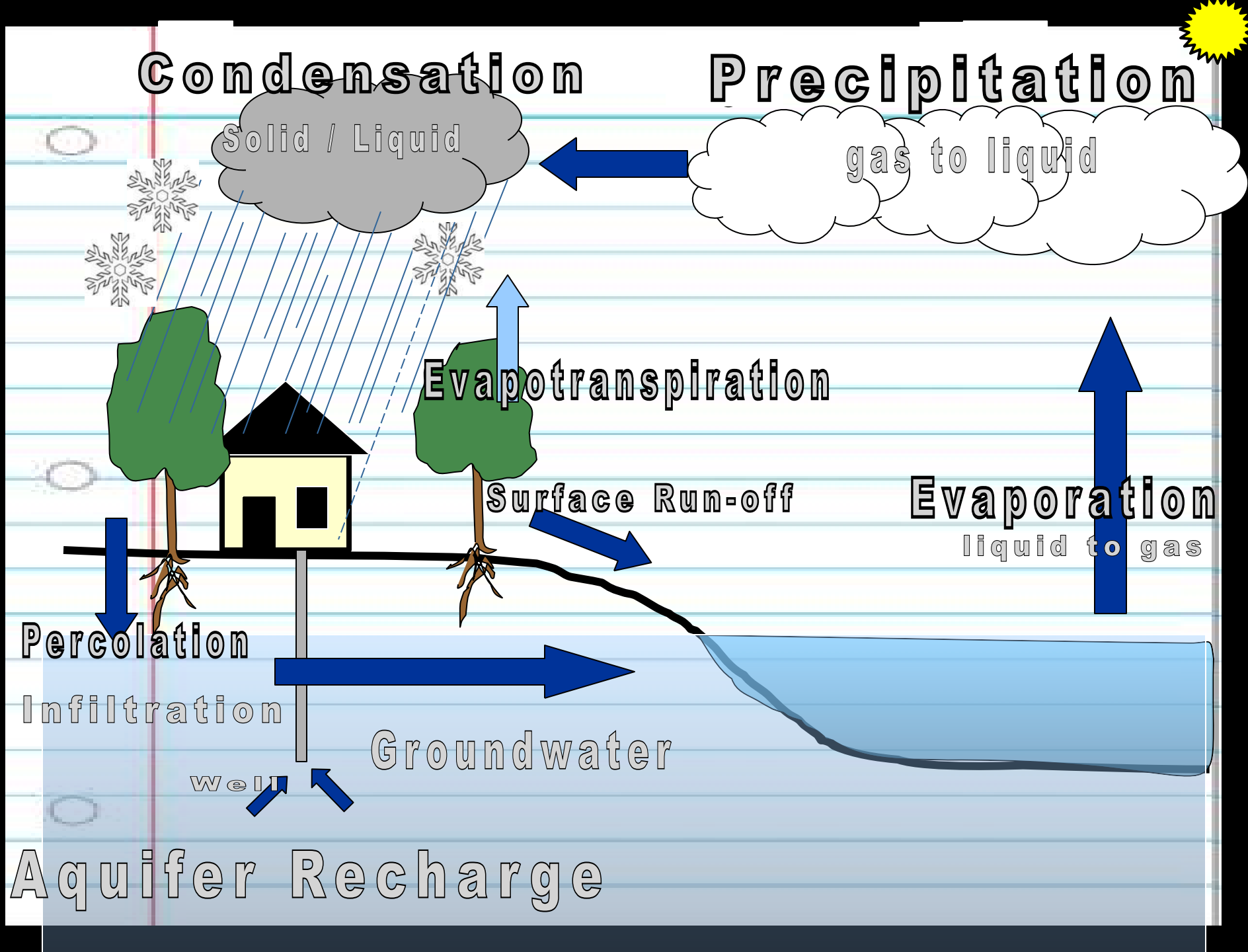
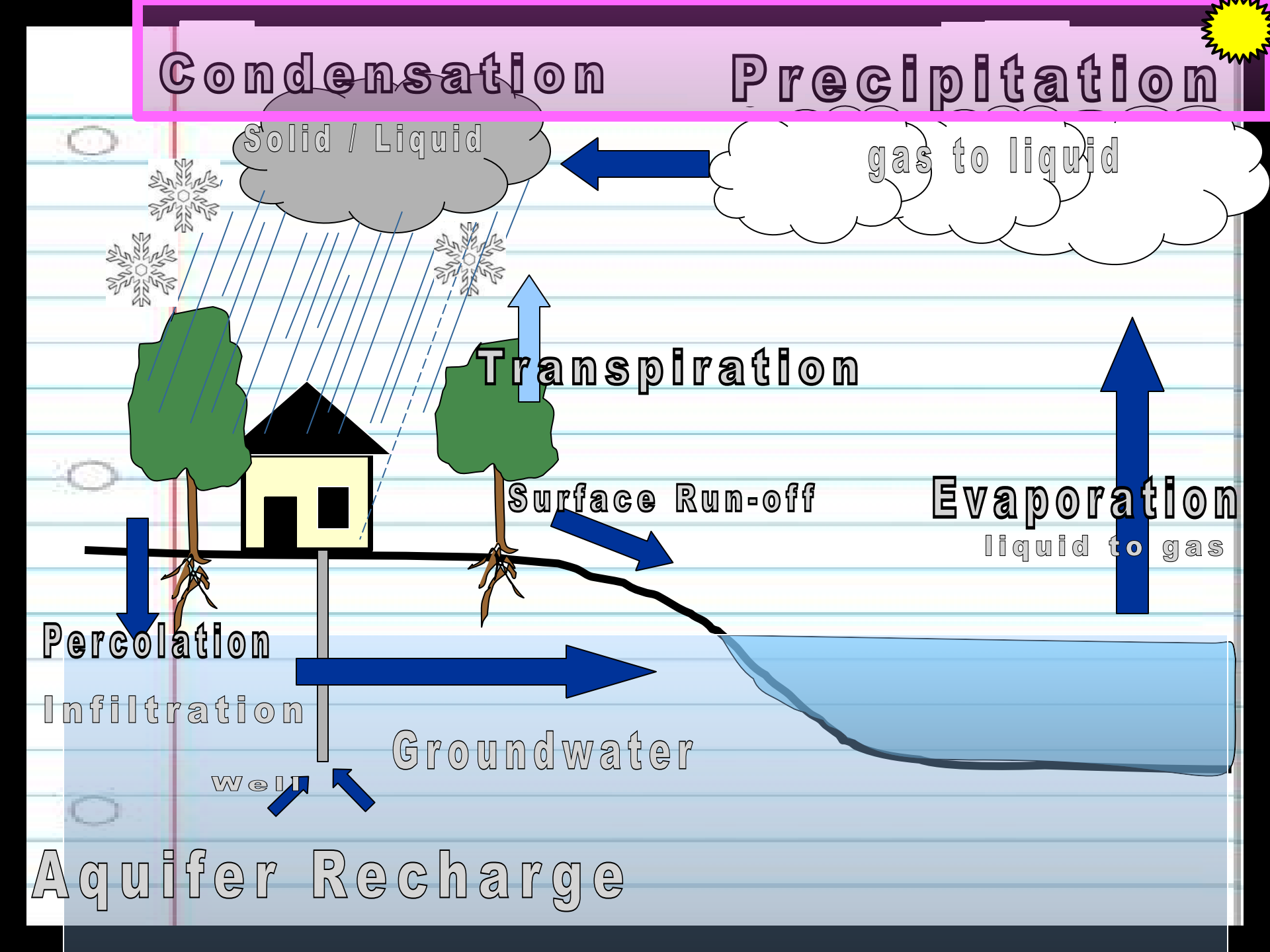
Aquifer Recharge


Precipitation
Solid / Liquid
Condensation
gas to liquid
Transpiration
Surface Run-off
Evaporation
liquid to gas
Percolation
Infiltration
Groundwater
Well
Aquifer Recharge

Which two have been switched?


Condensation
Solid / Liquid
Precipitation
gas to liquid
Evapotranspiration
Surface Run-off
Evaporation
liquid to gas
Percolation
Infiltration
Groundwater
Well
Aquifer Recharge


Condensation
Precipitation
Solid / Liquid
gas to liquid
Transpiration
Surface Run-off
Evaporation
liquid to gas
Percolation
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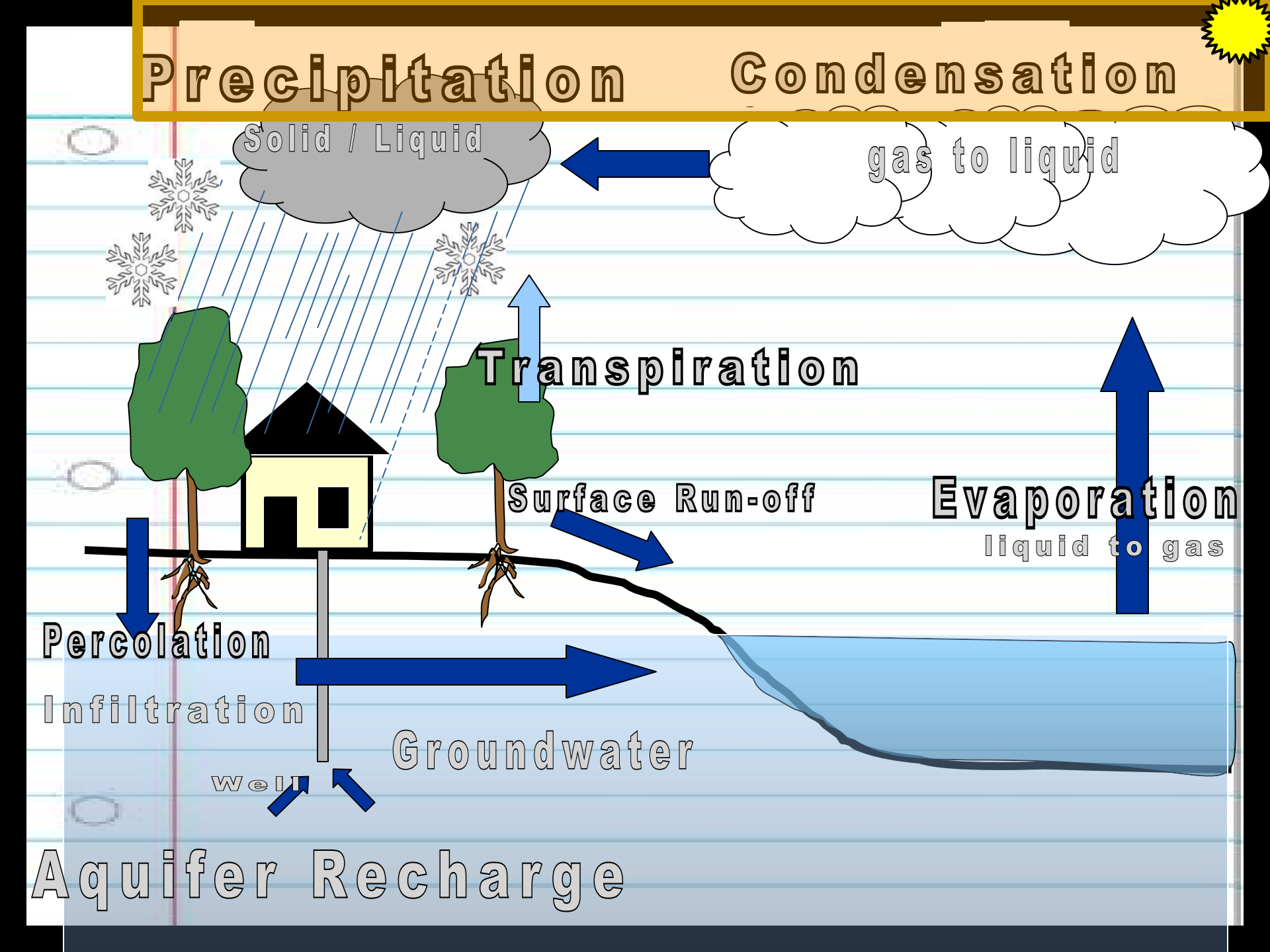
Well
Aquifer Recharge


Precipitation
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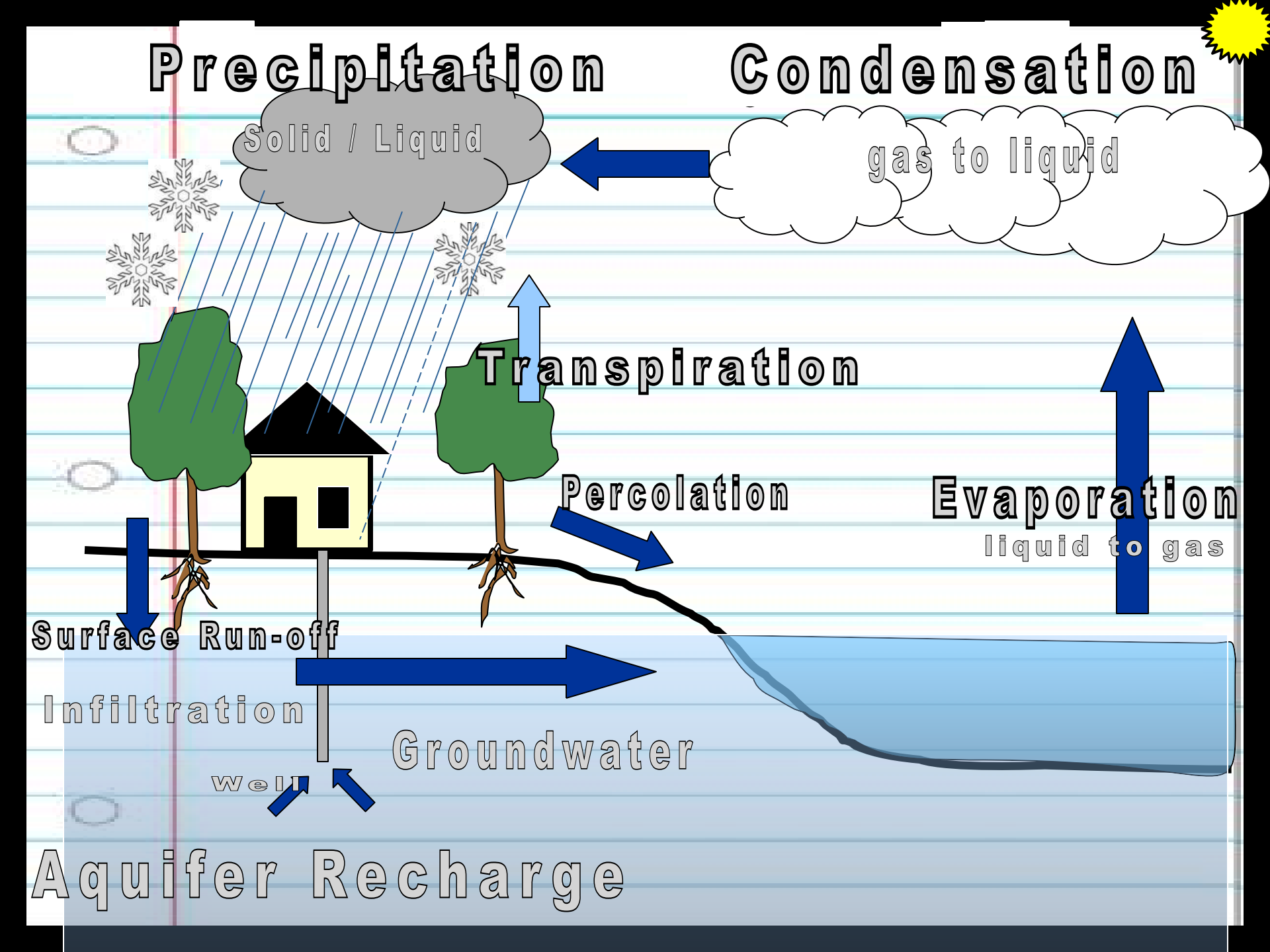
Precipitation
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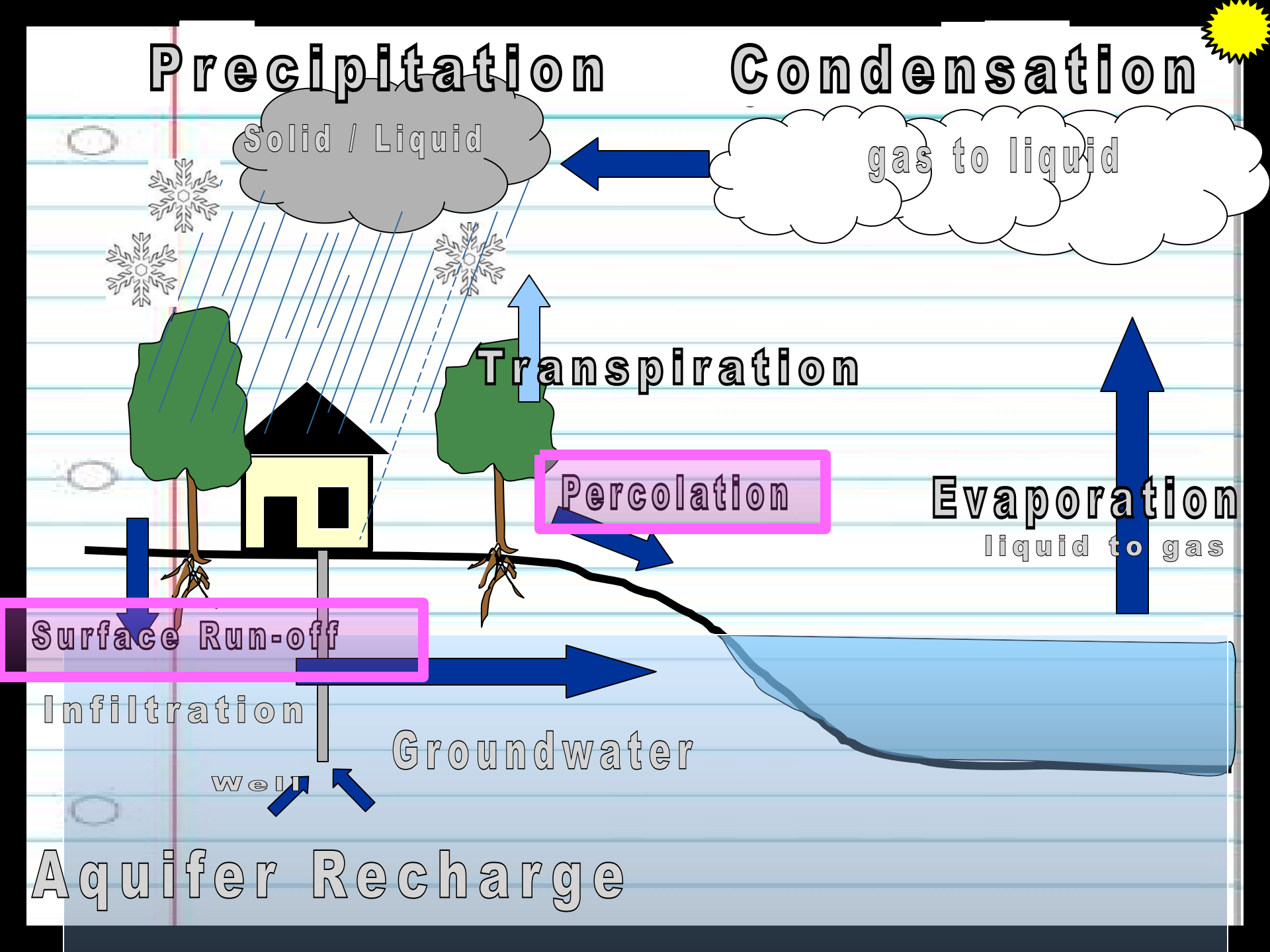
Condensation
gas to liquid
Transpiration
Percolation
Evaporation
liquid to gas
Surface Run-off
Infiltration
Groundwater
Well
Aquifer Recharge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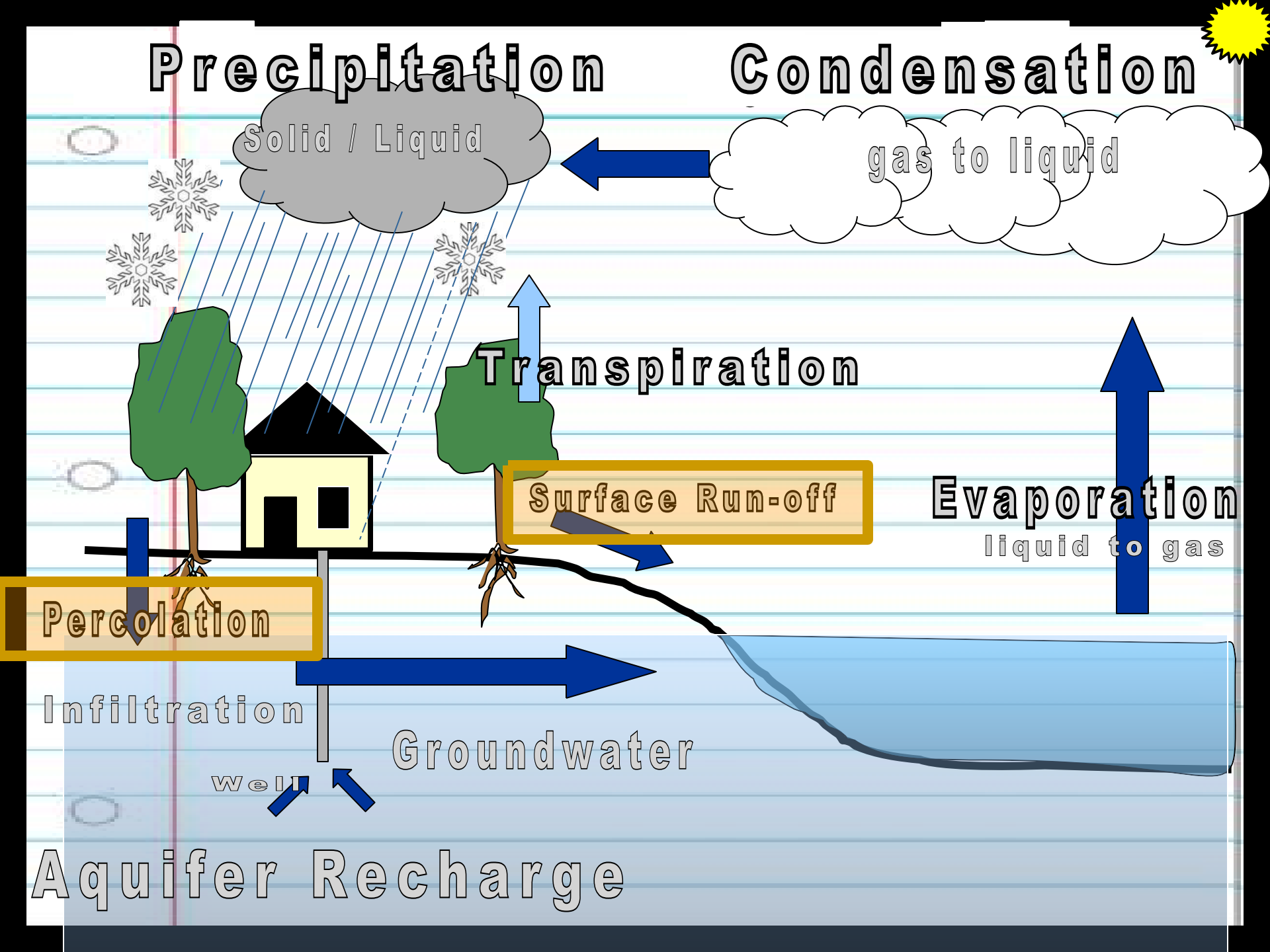
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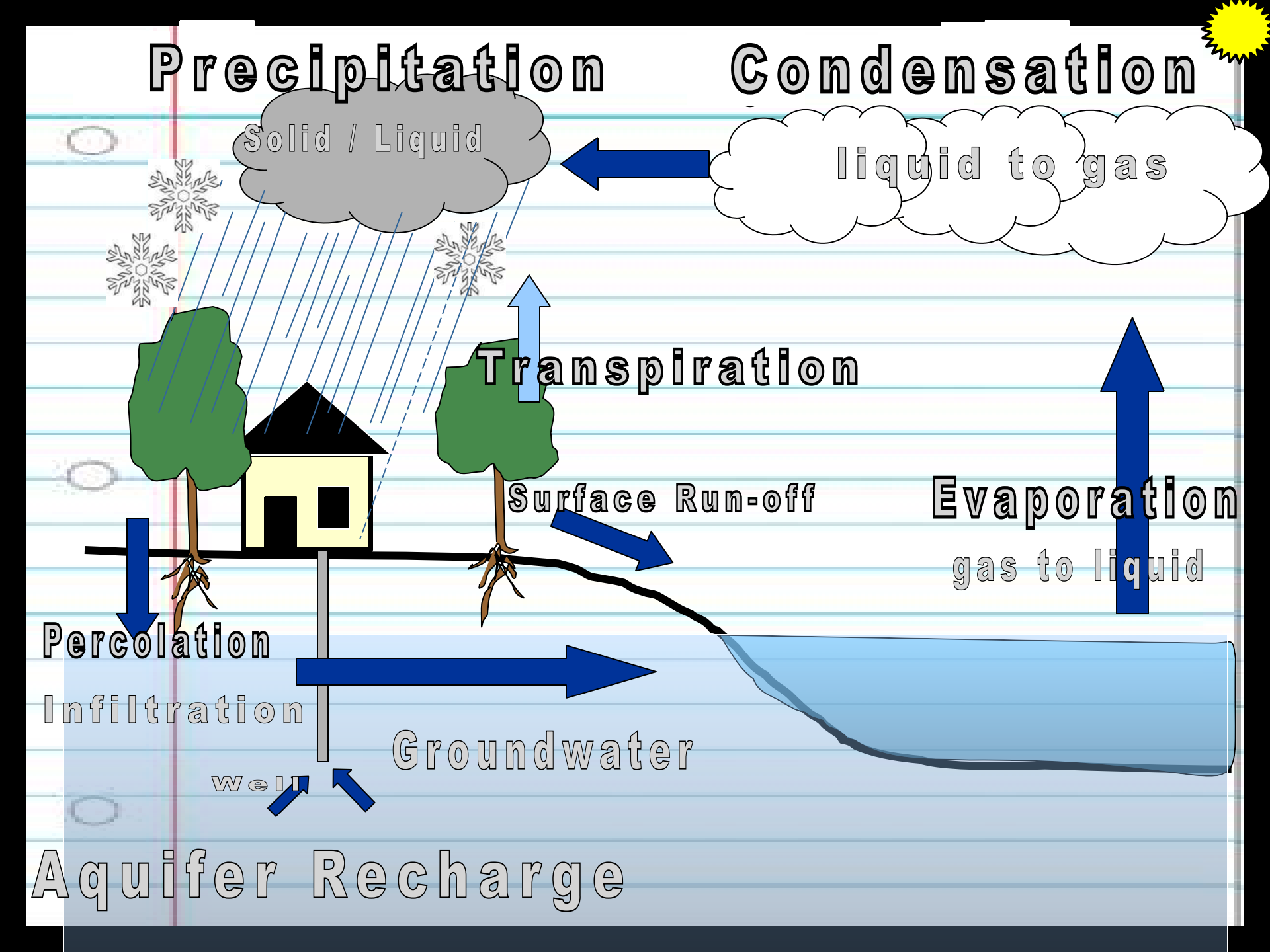
Precipitation
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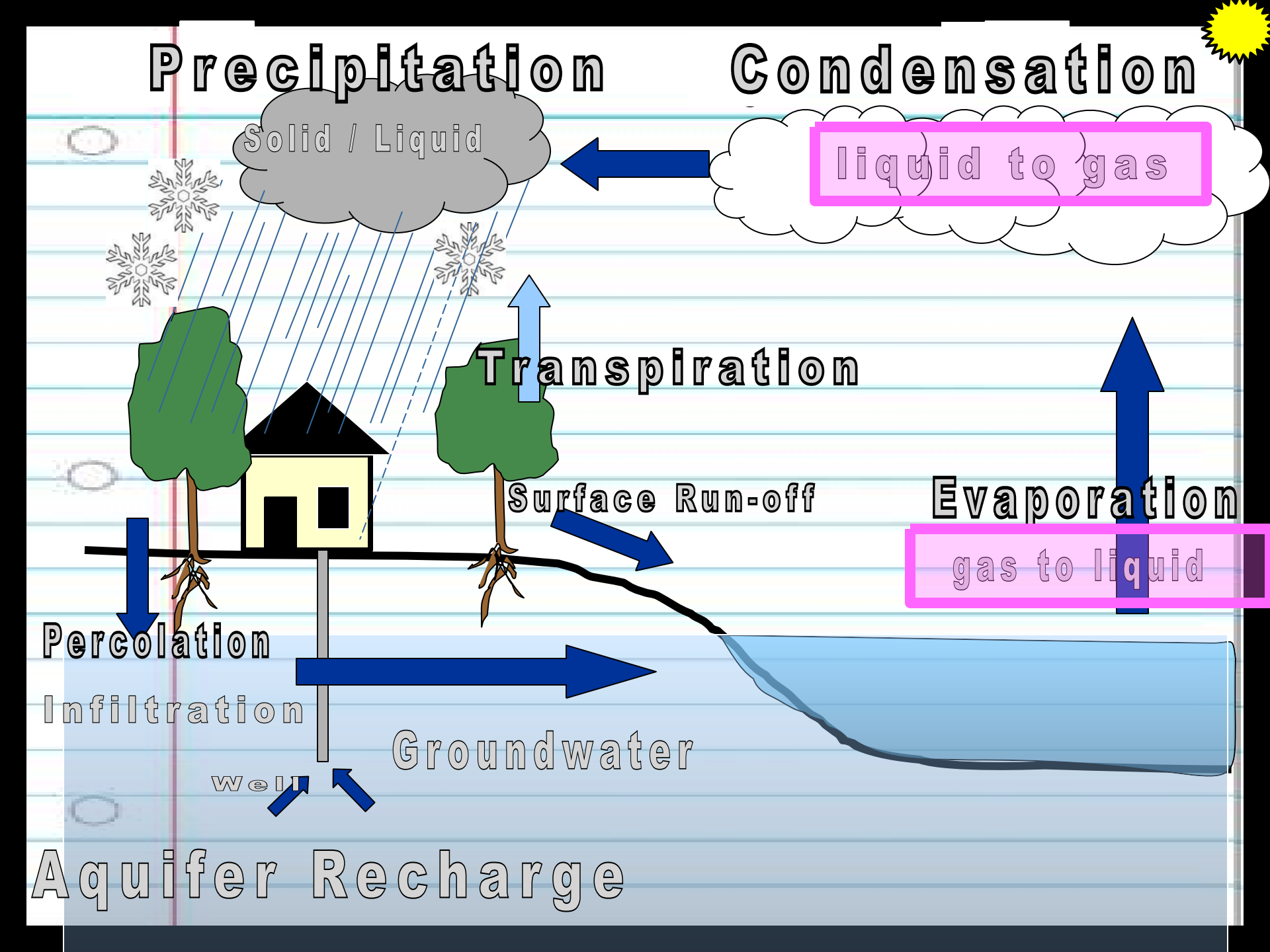
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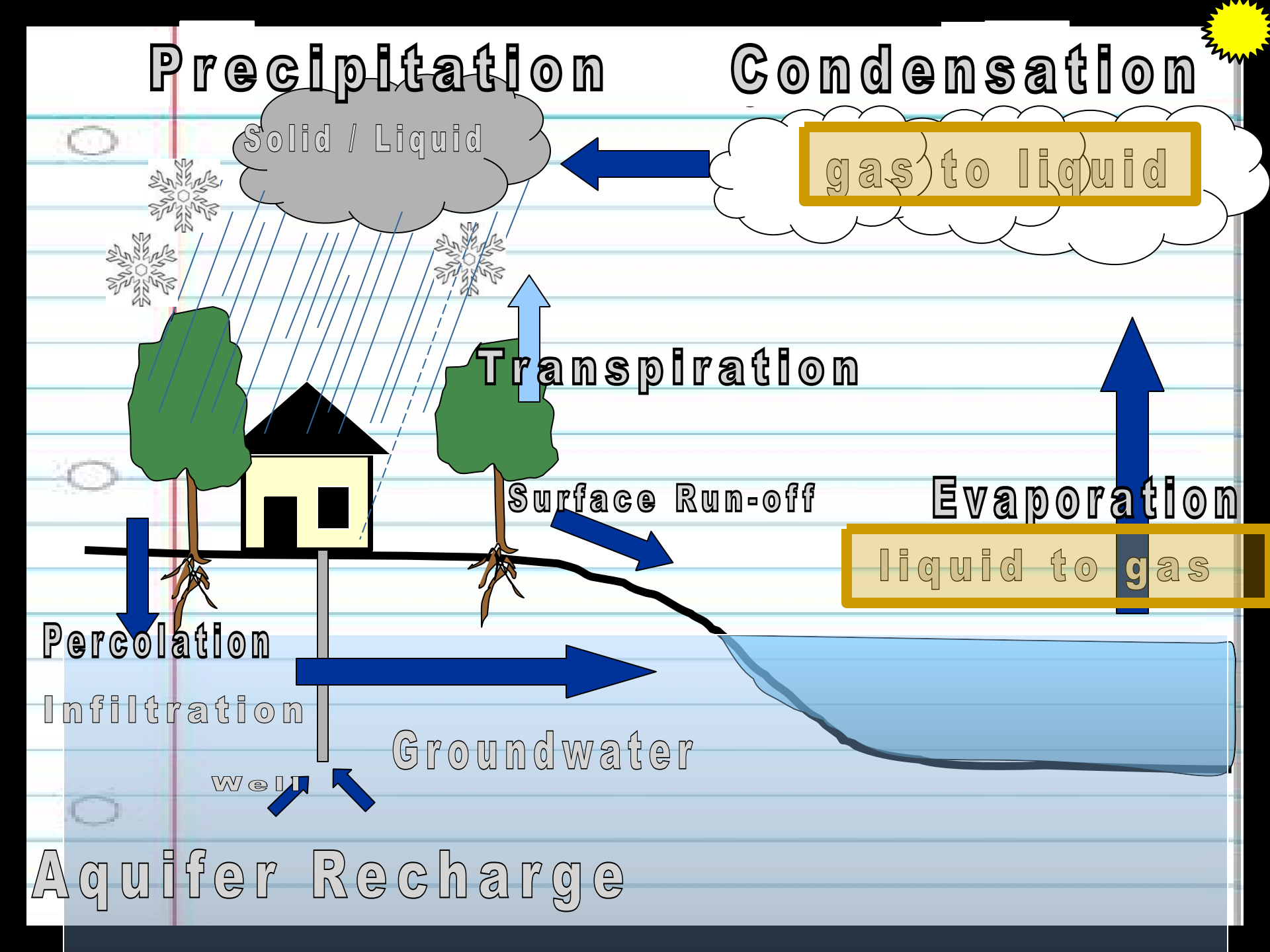
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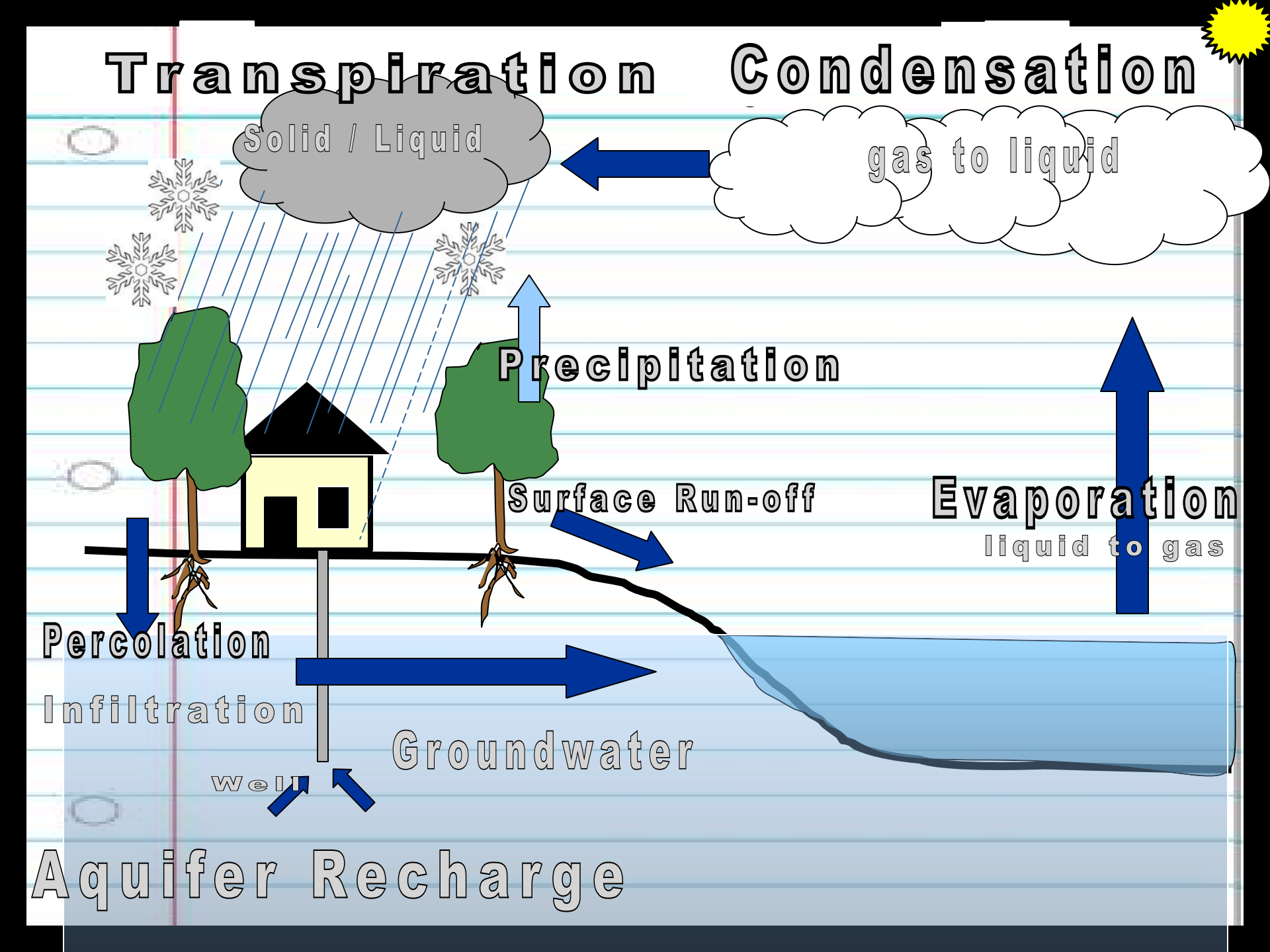
Transpiration
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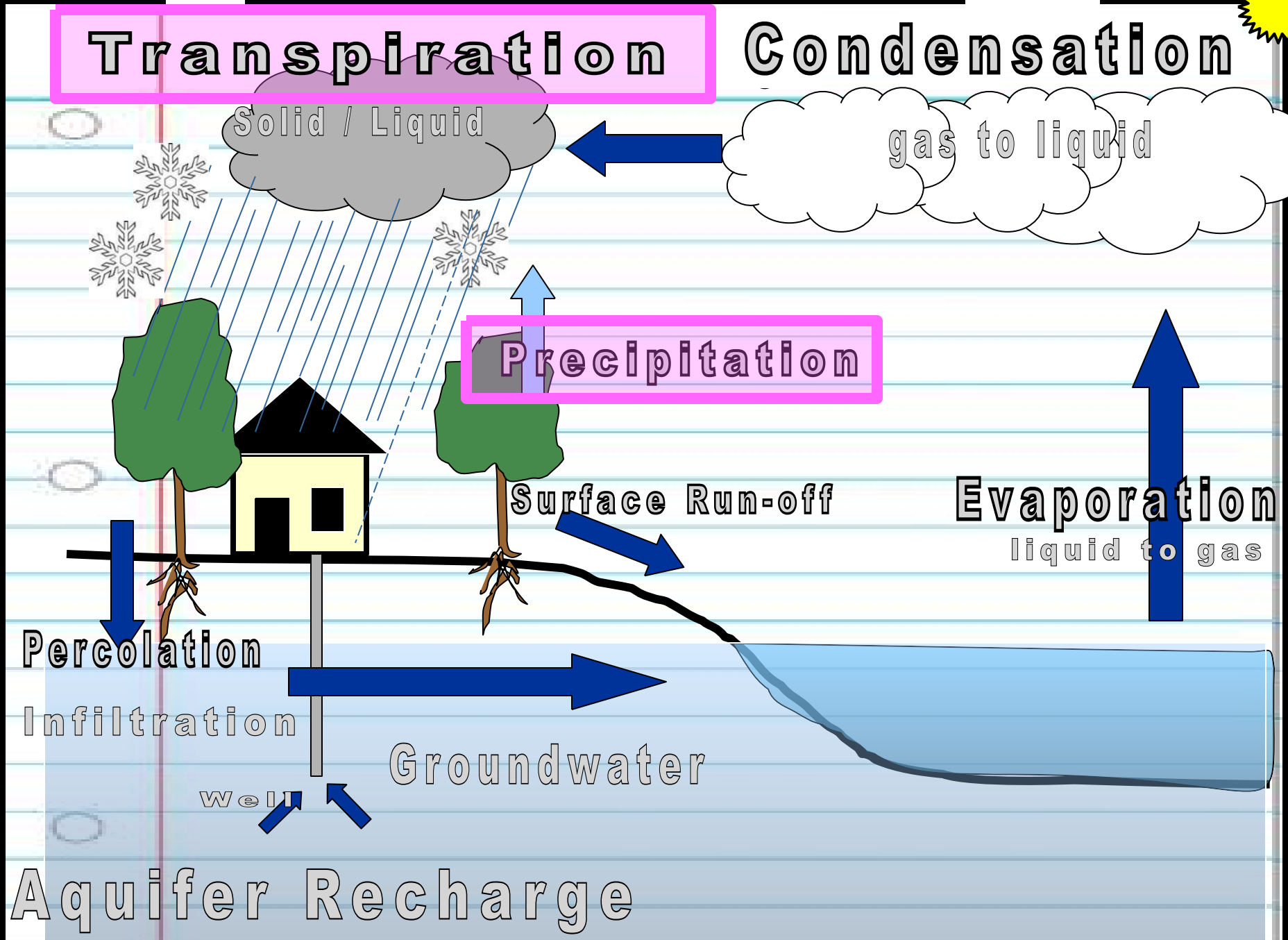
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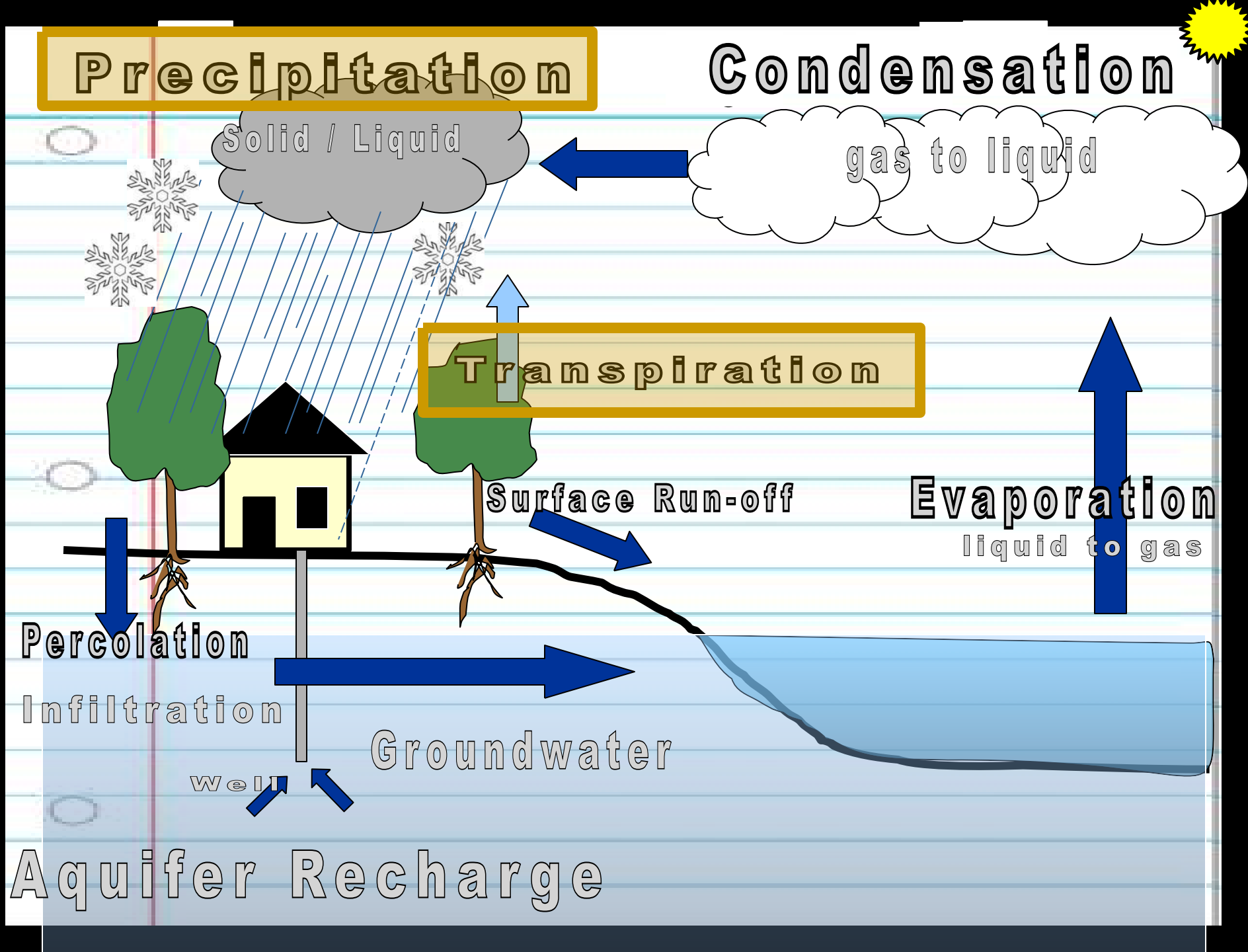
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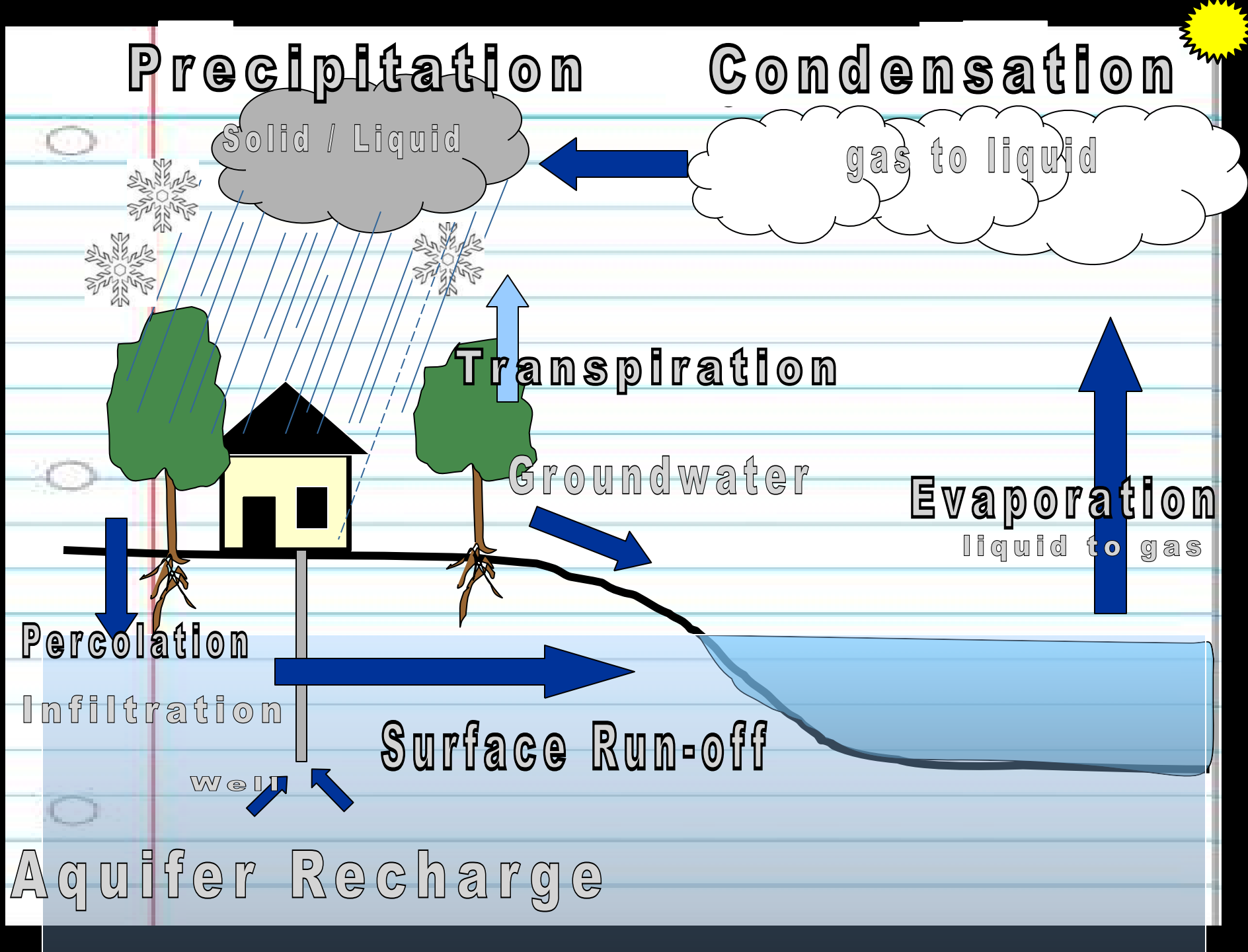
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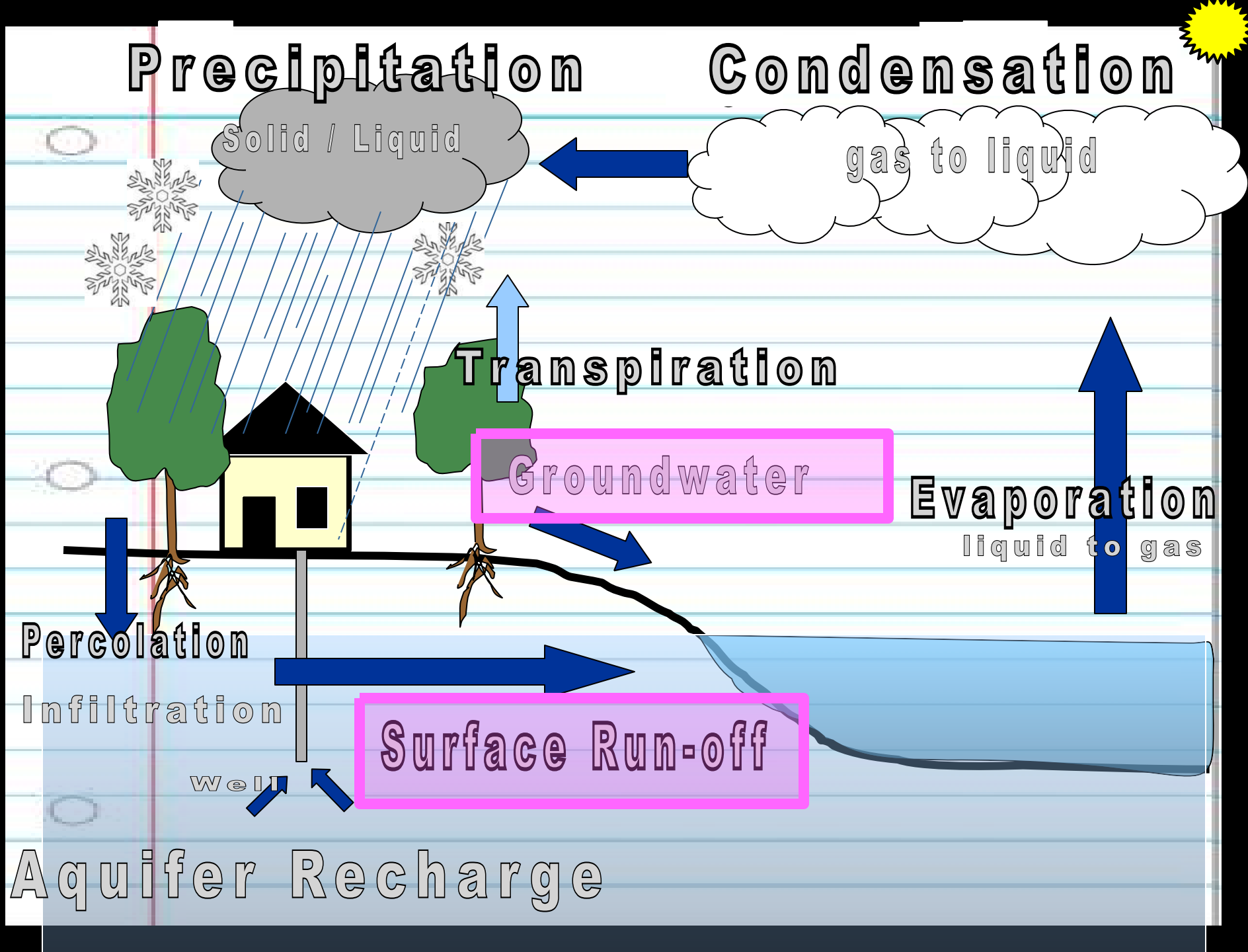
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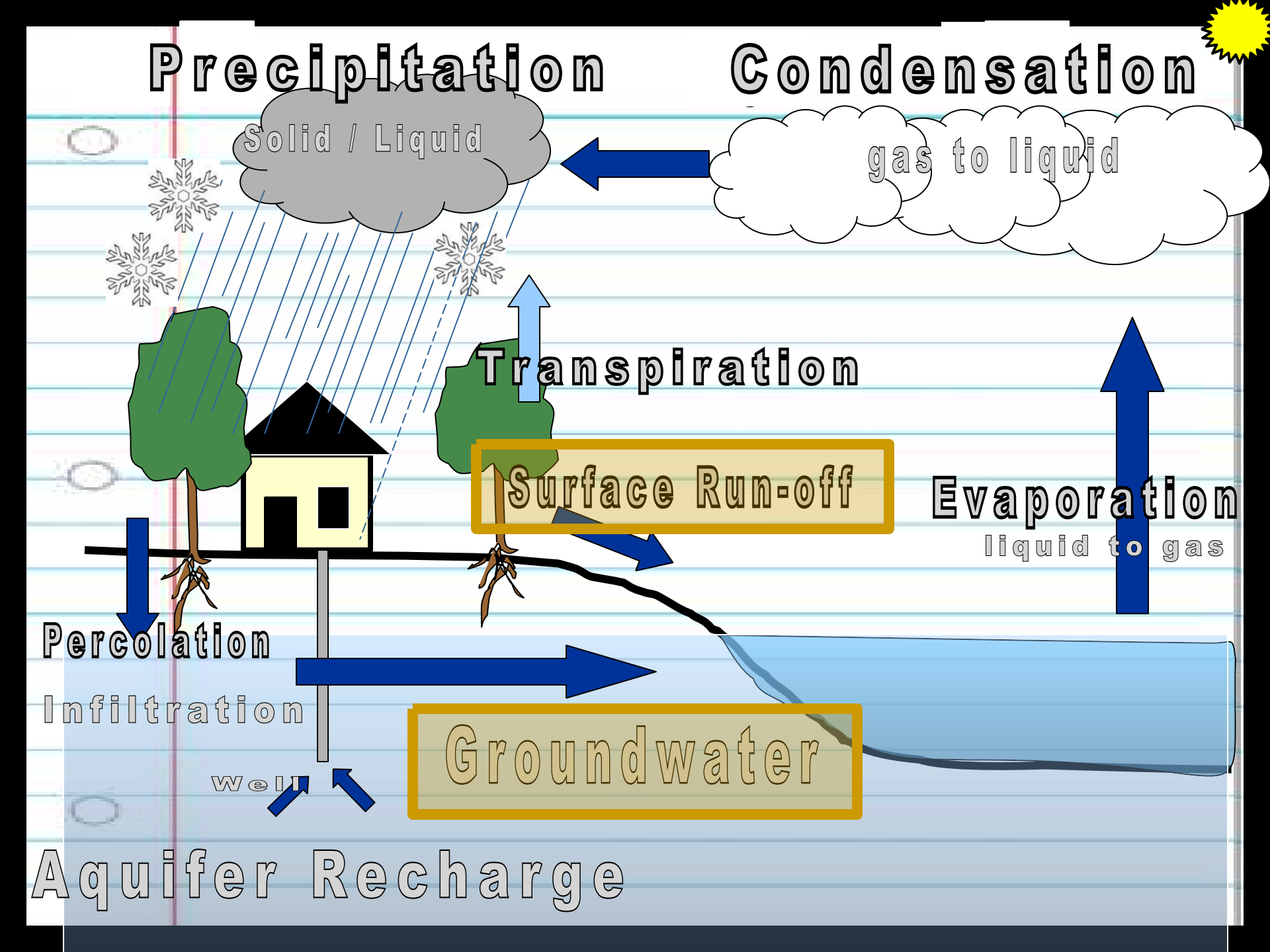
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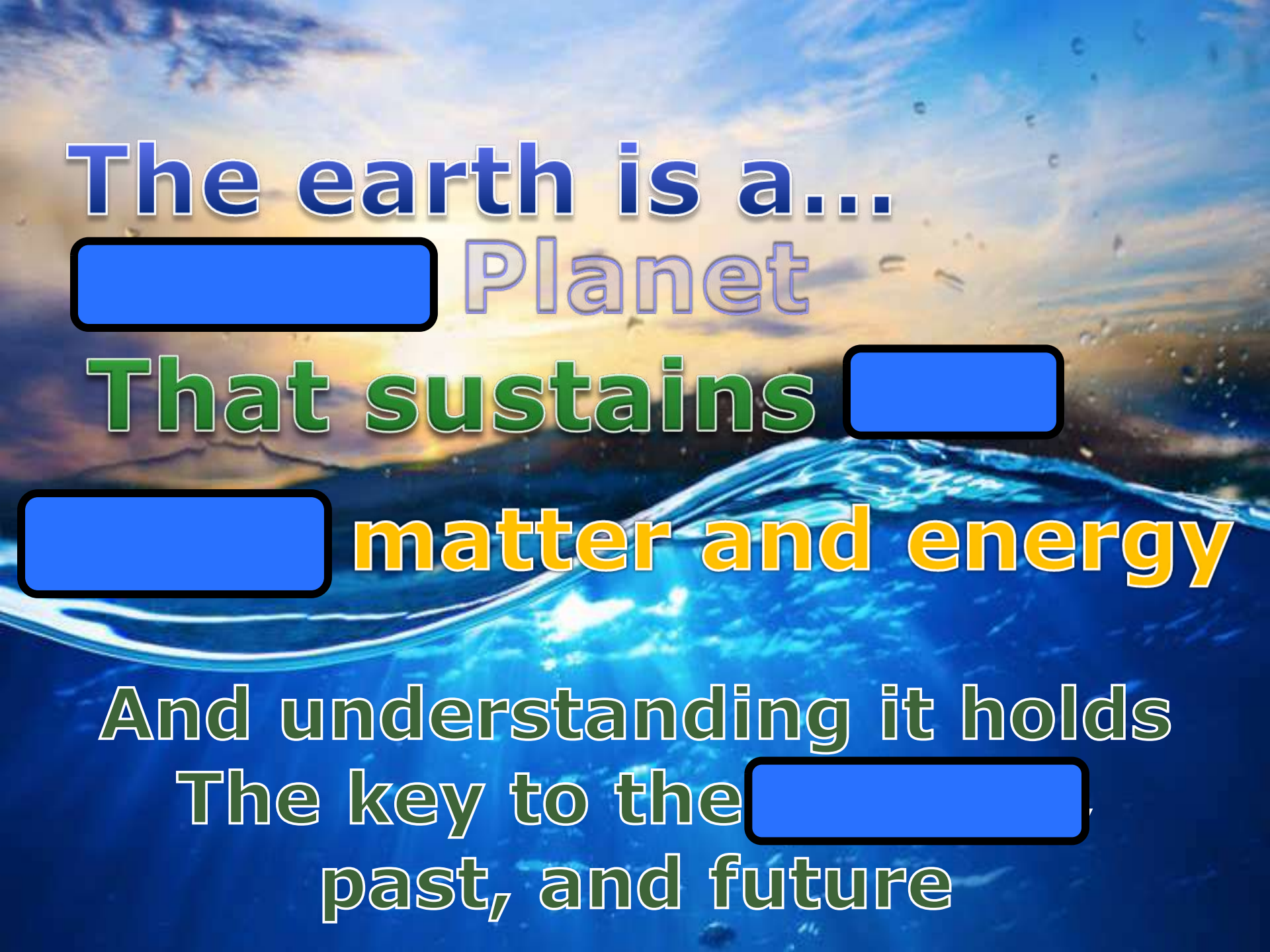
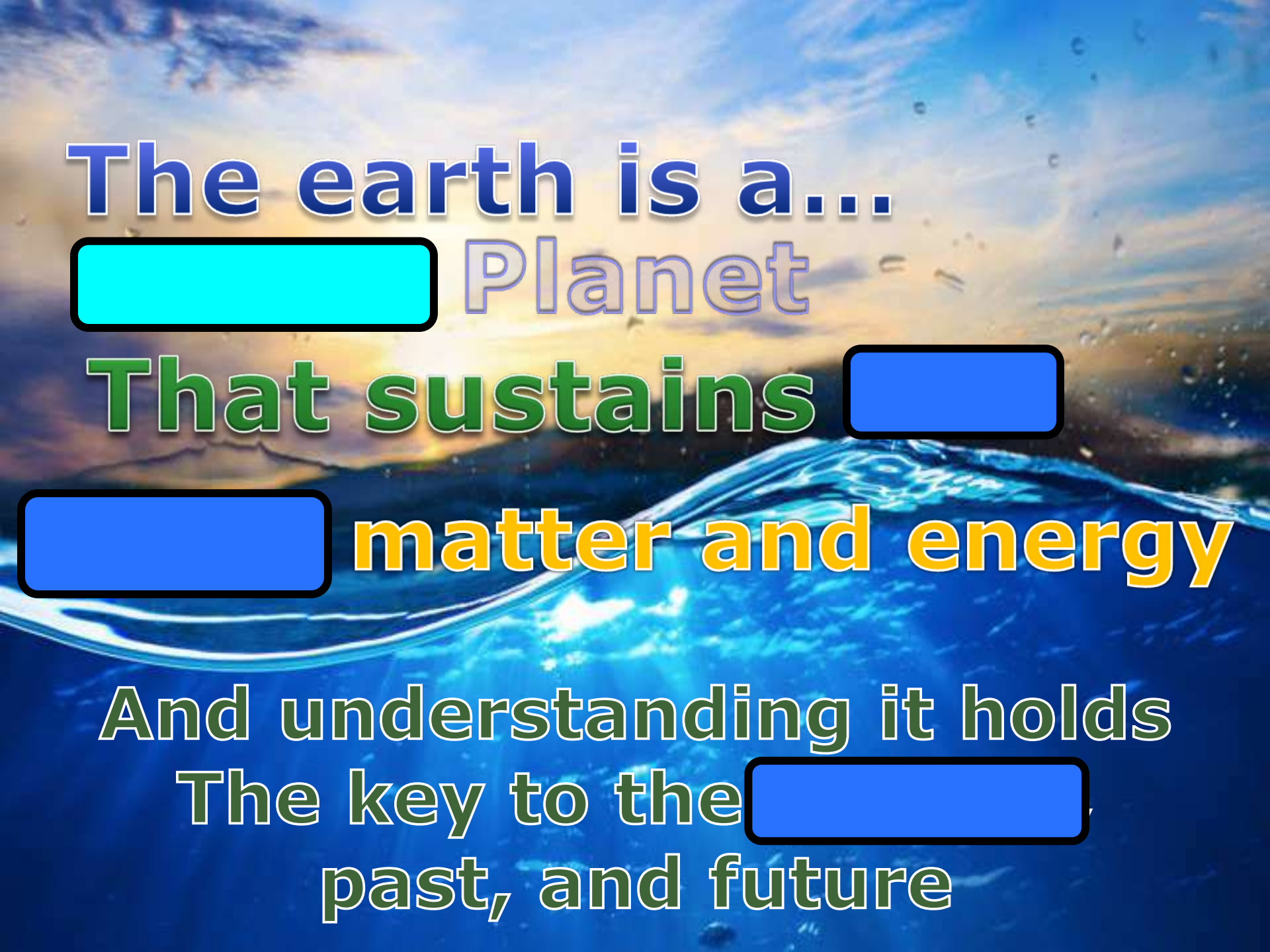

The earth is a...
Planet
That sustains
matter and energy
And understanding it holds
The key to the
past, and future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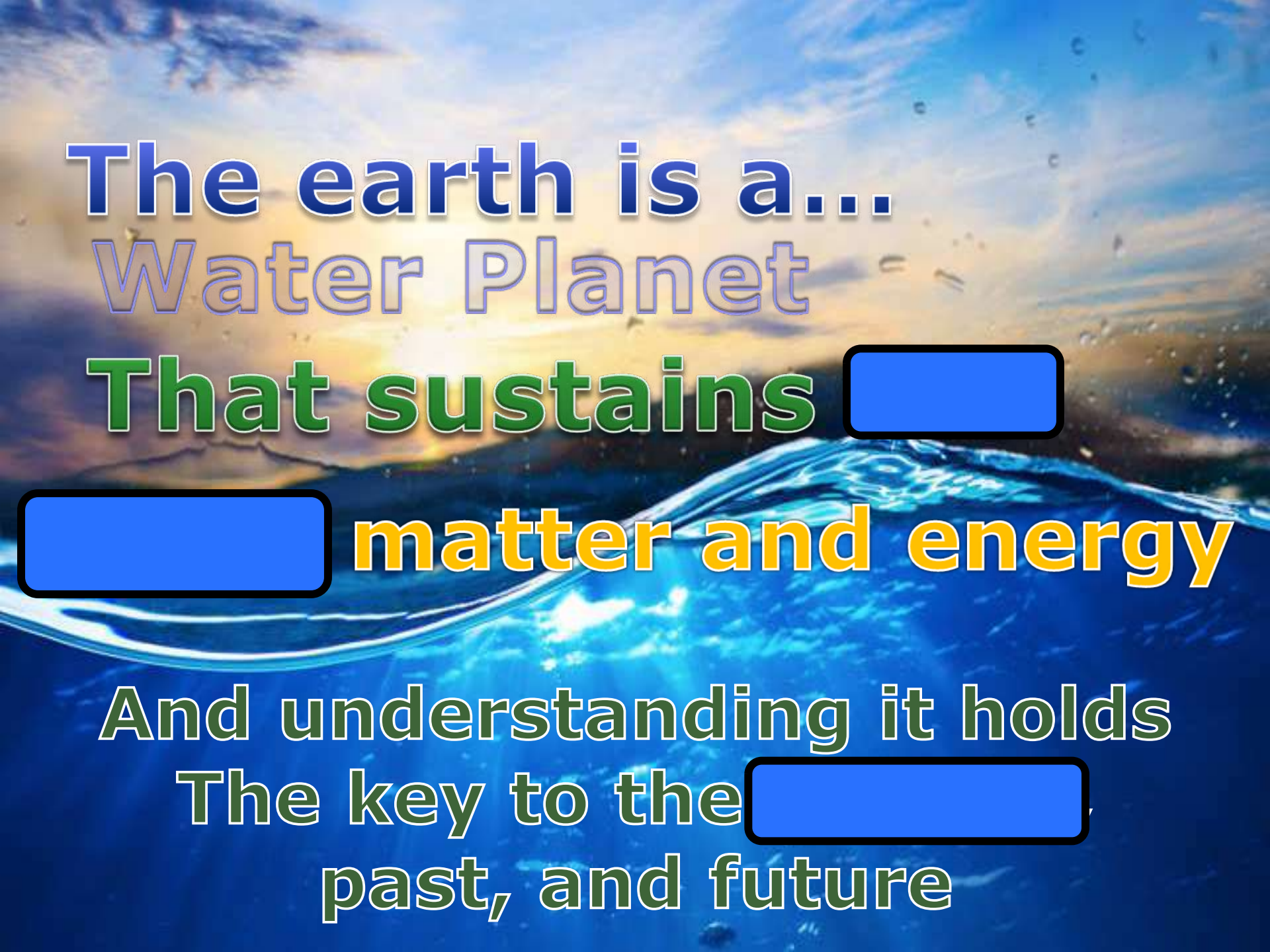
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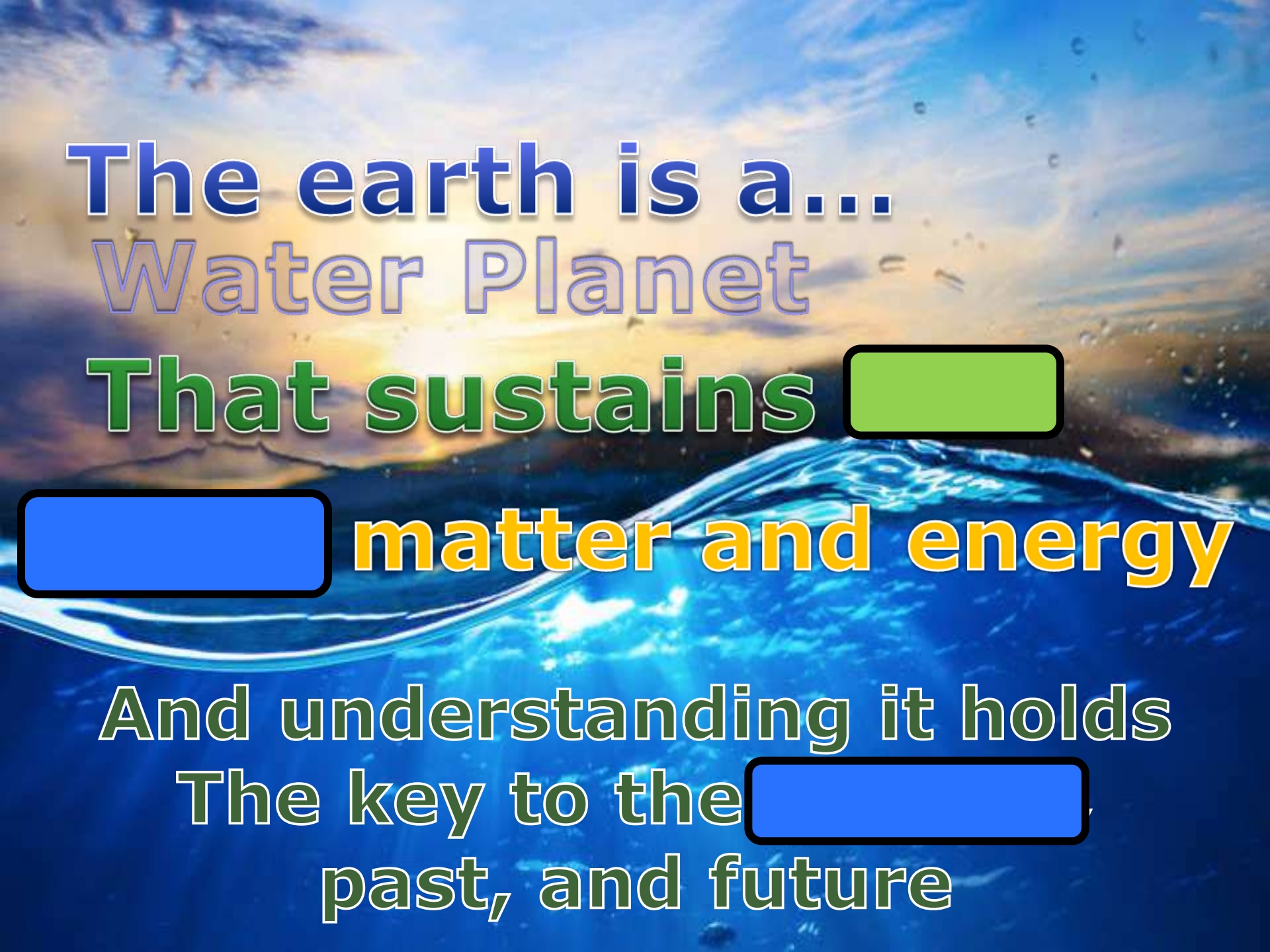
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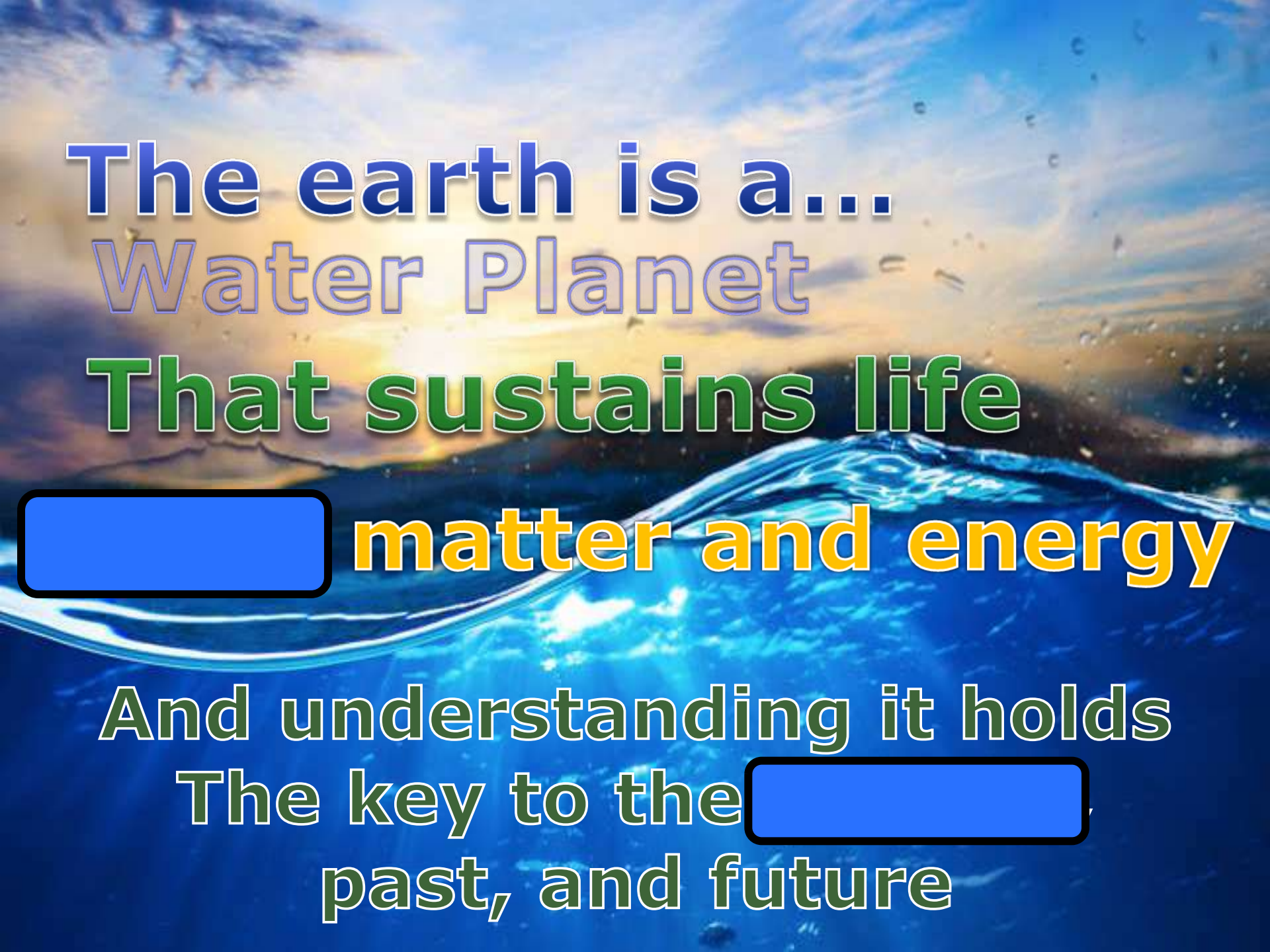
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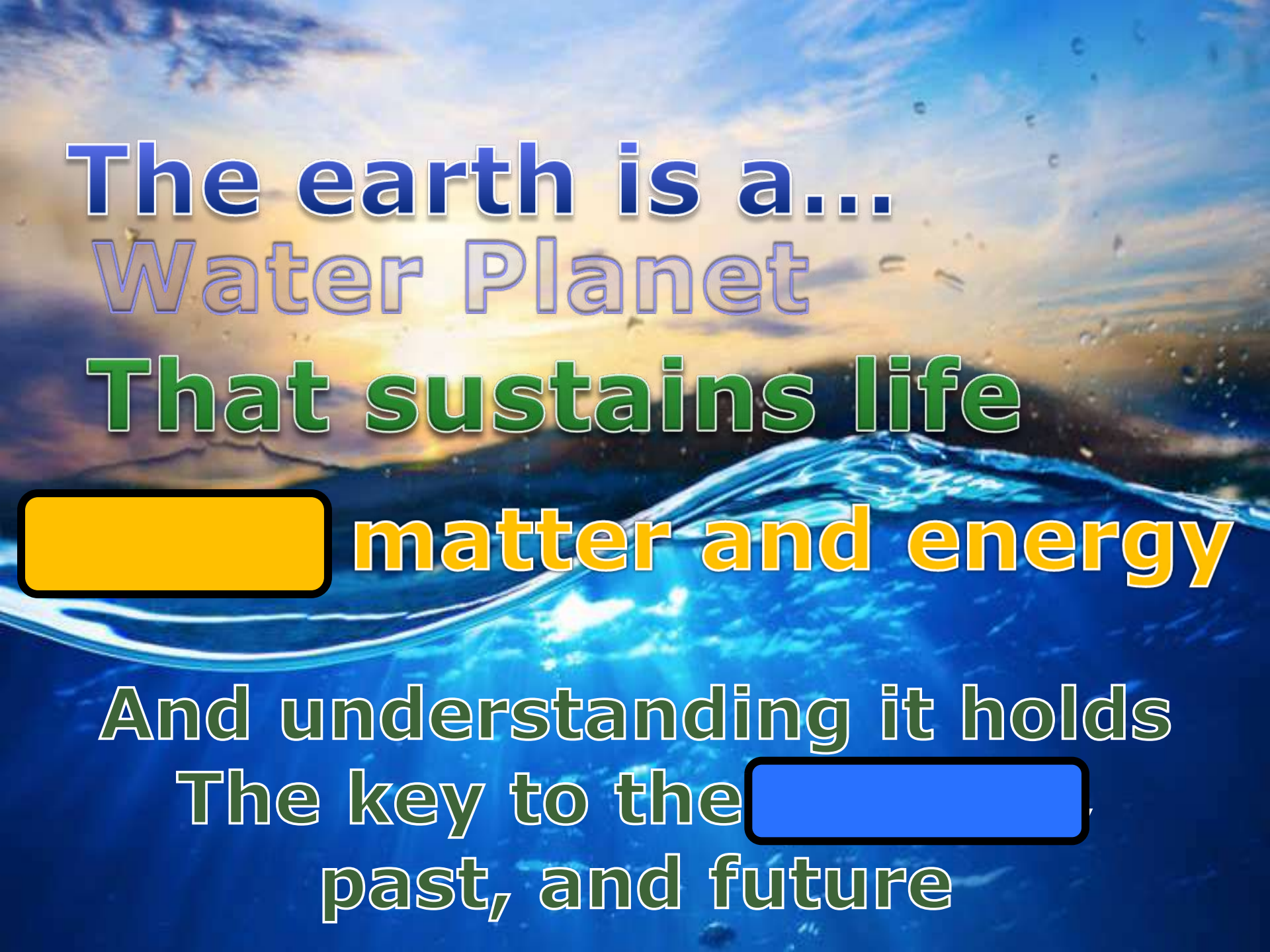
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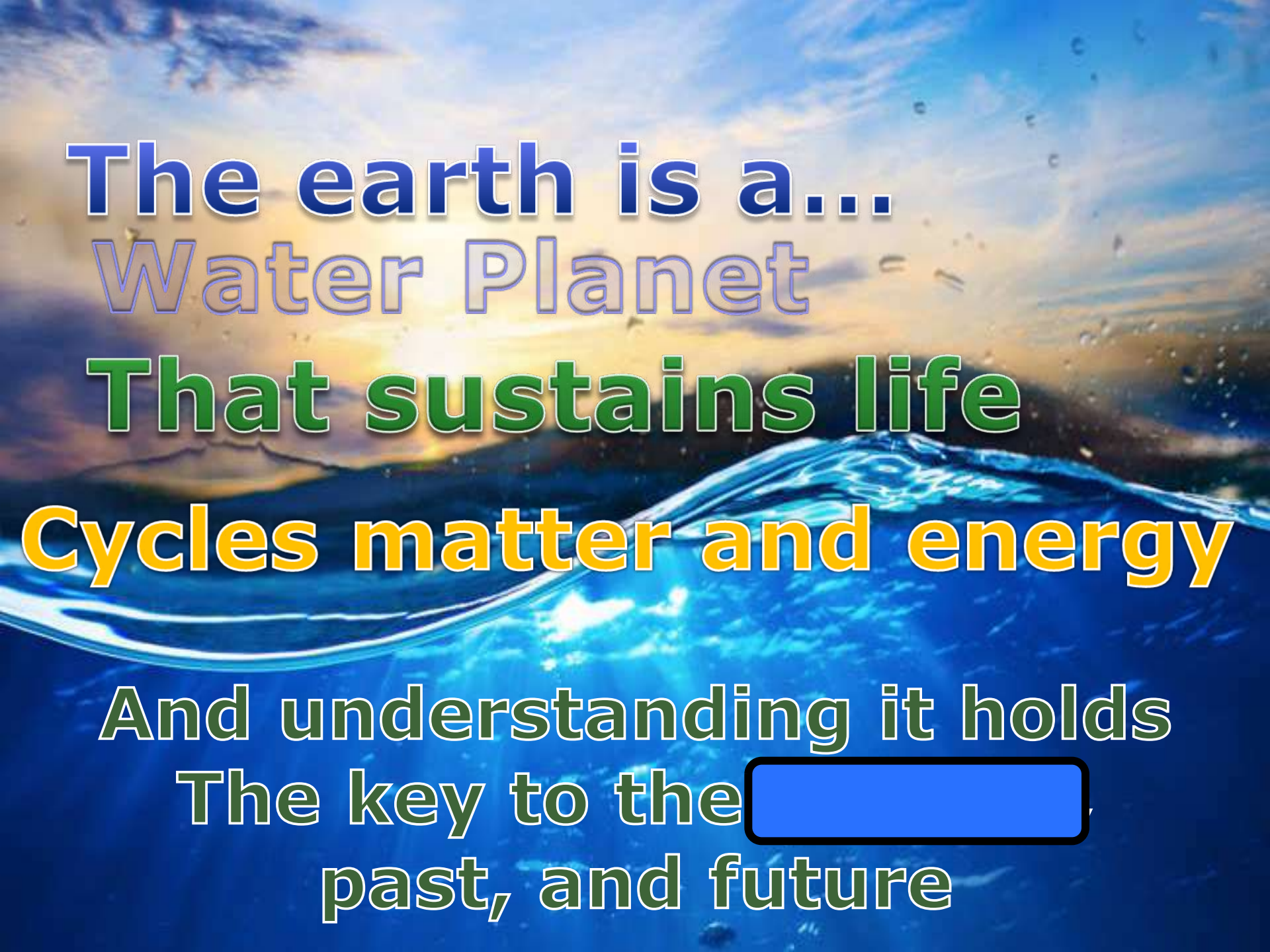
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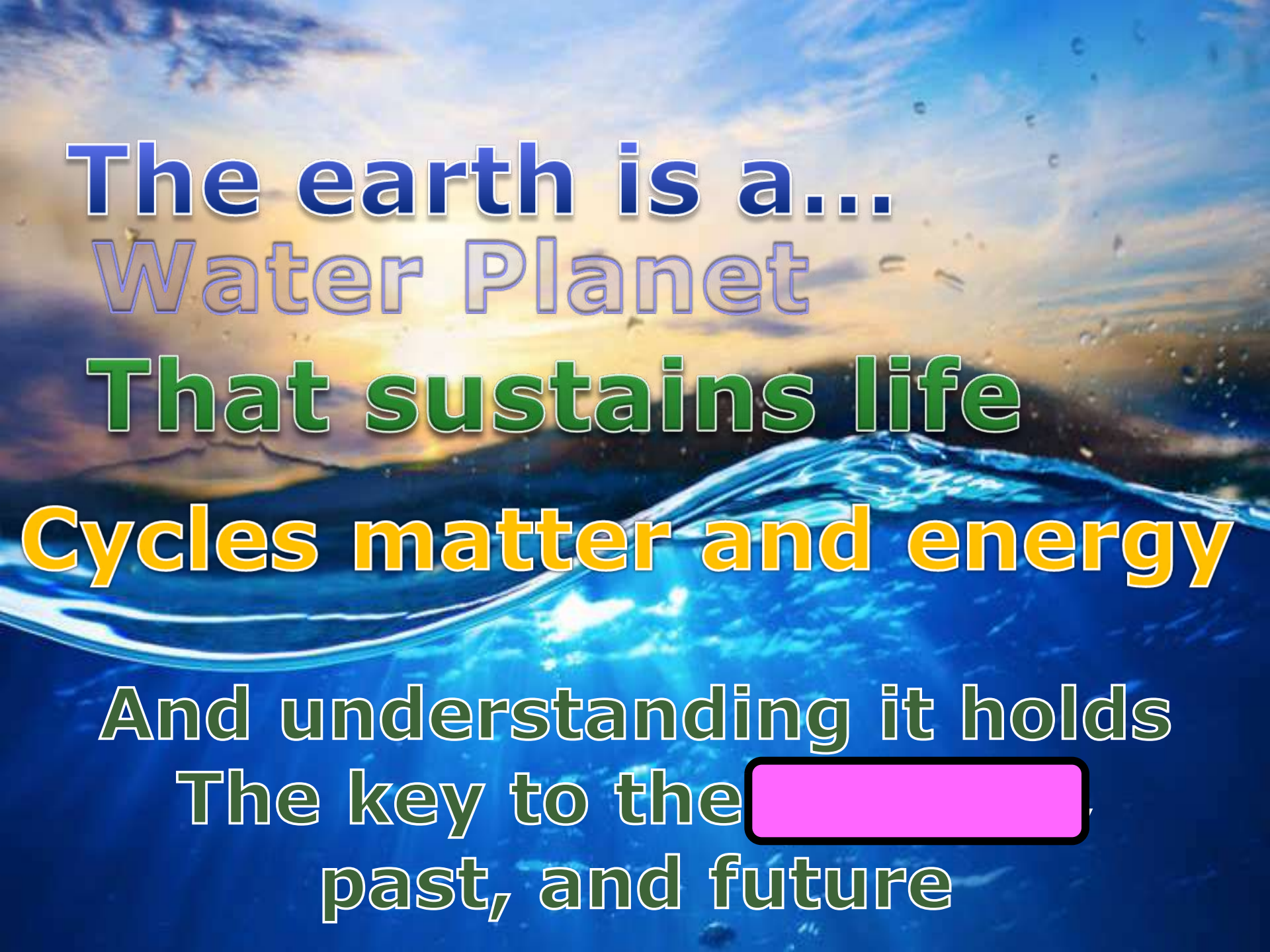
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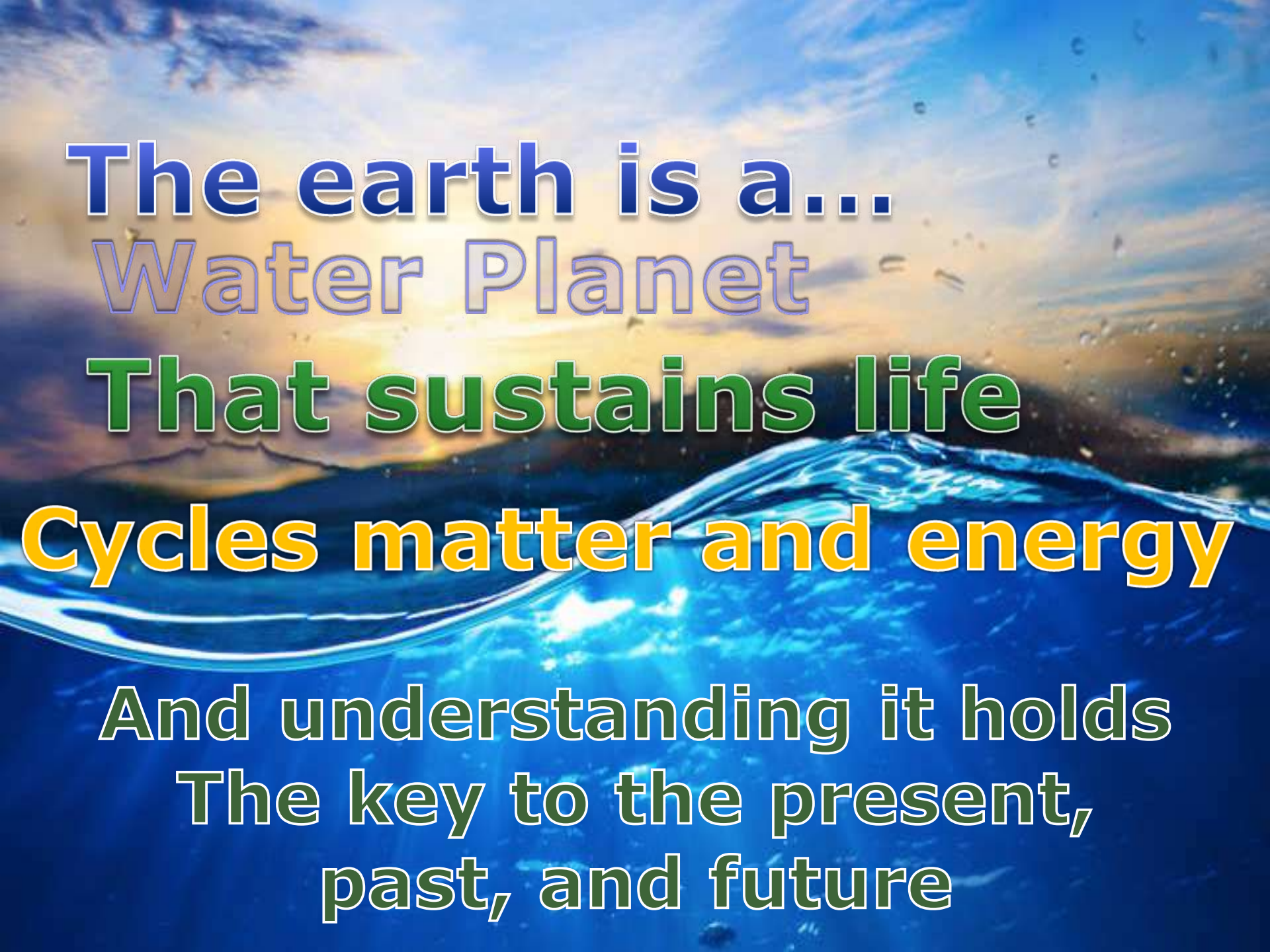
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Cycles matter and energy
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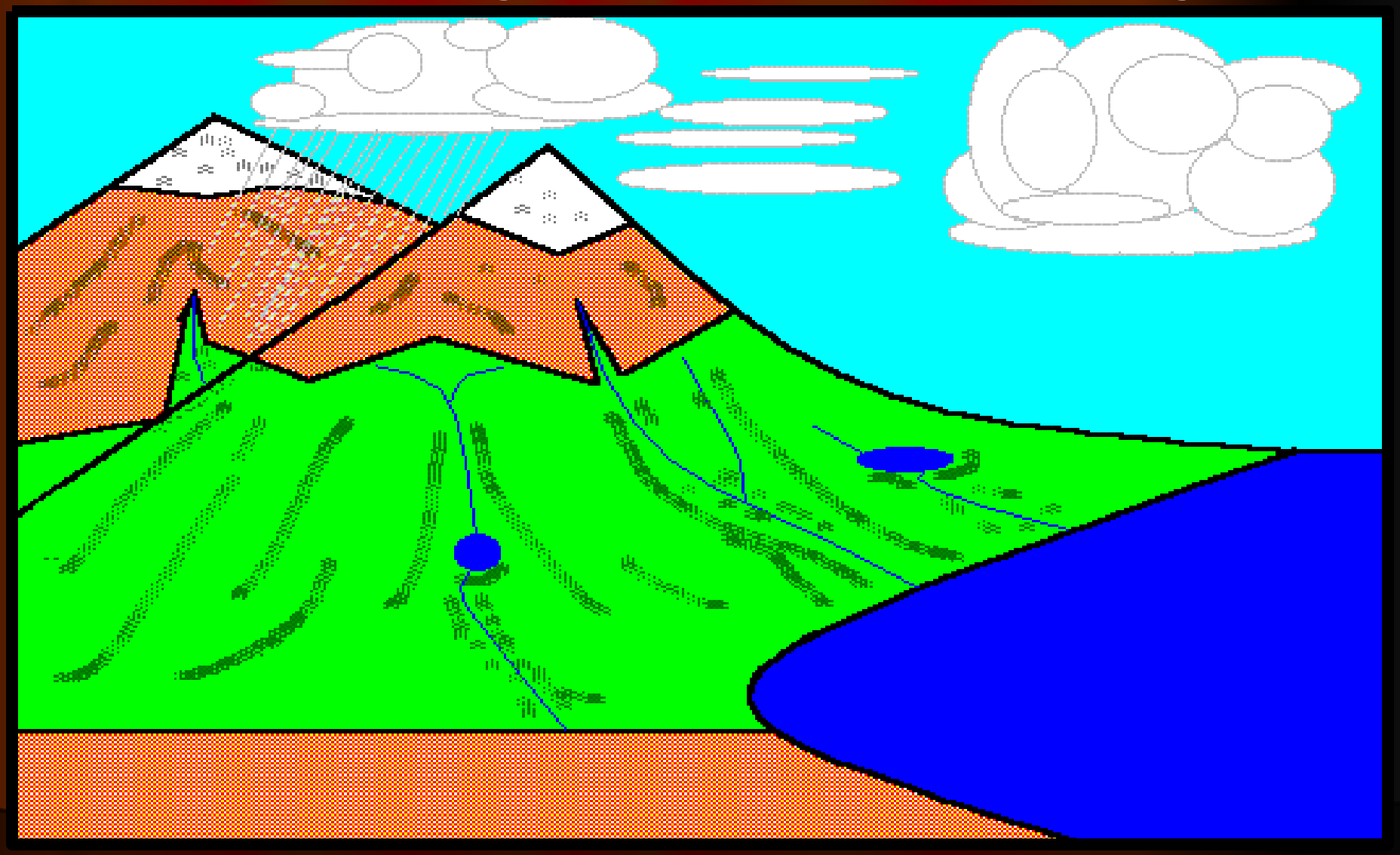
- Evaporation: Substance changes from a liquid state to gas state (requires energy).



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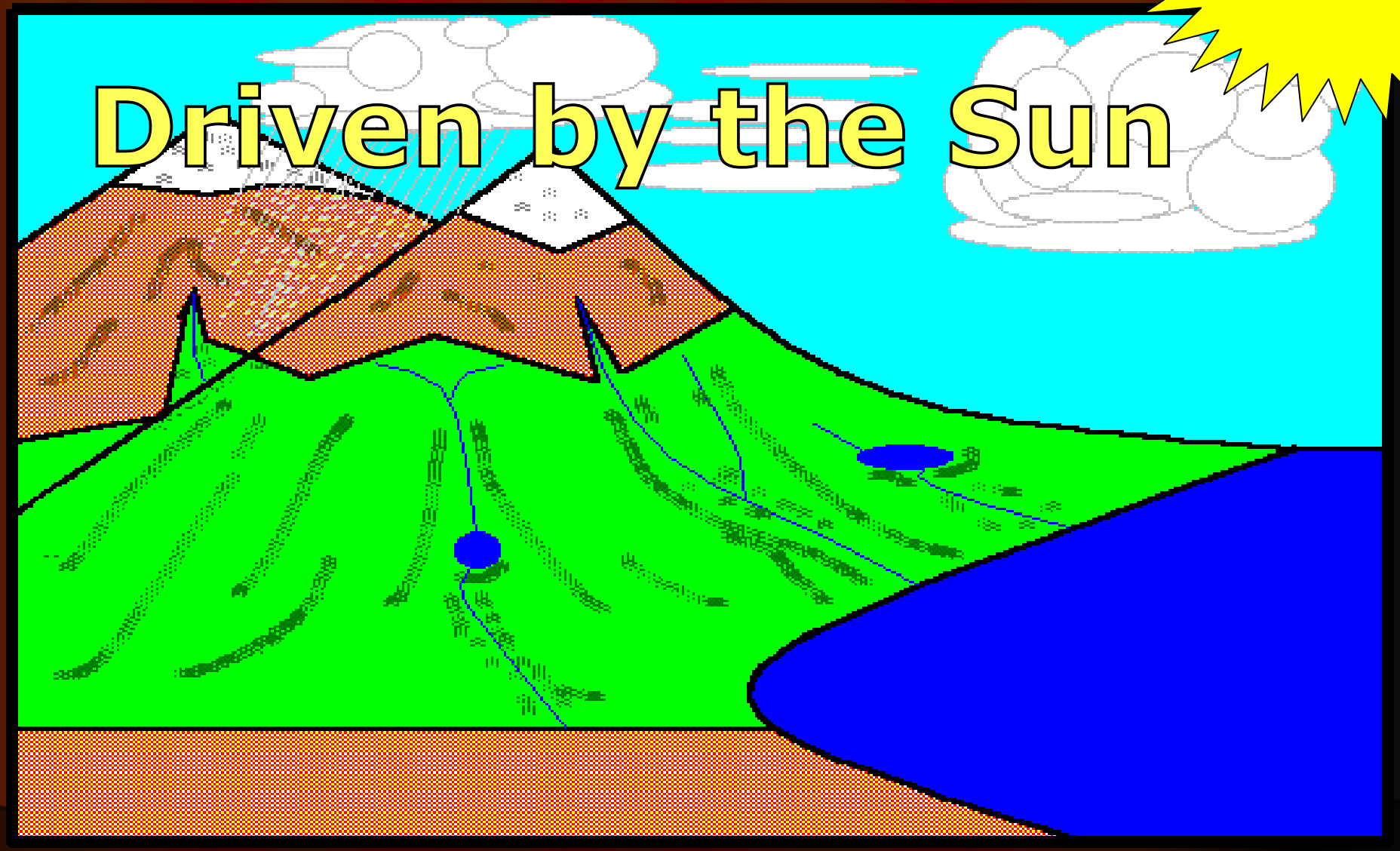
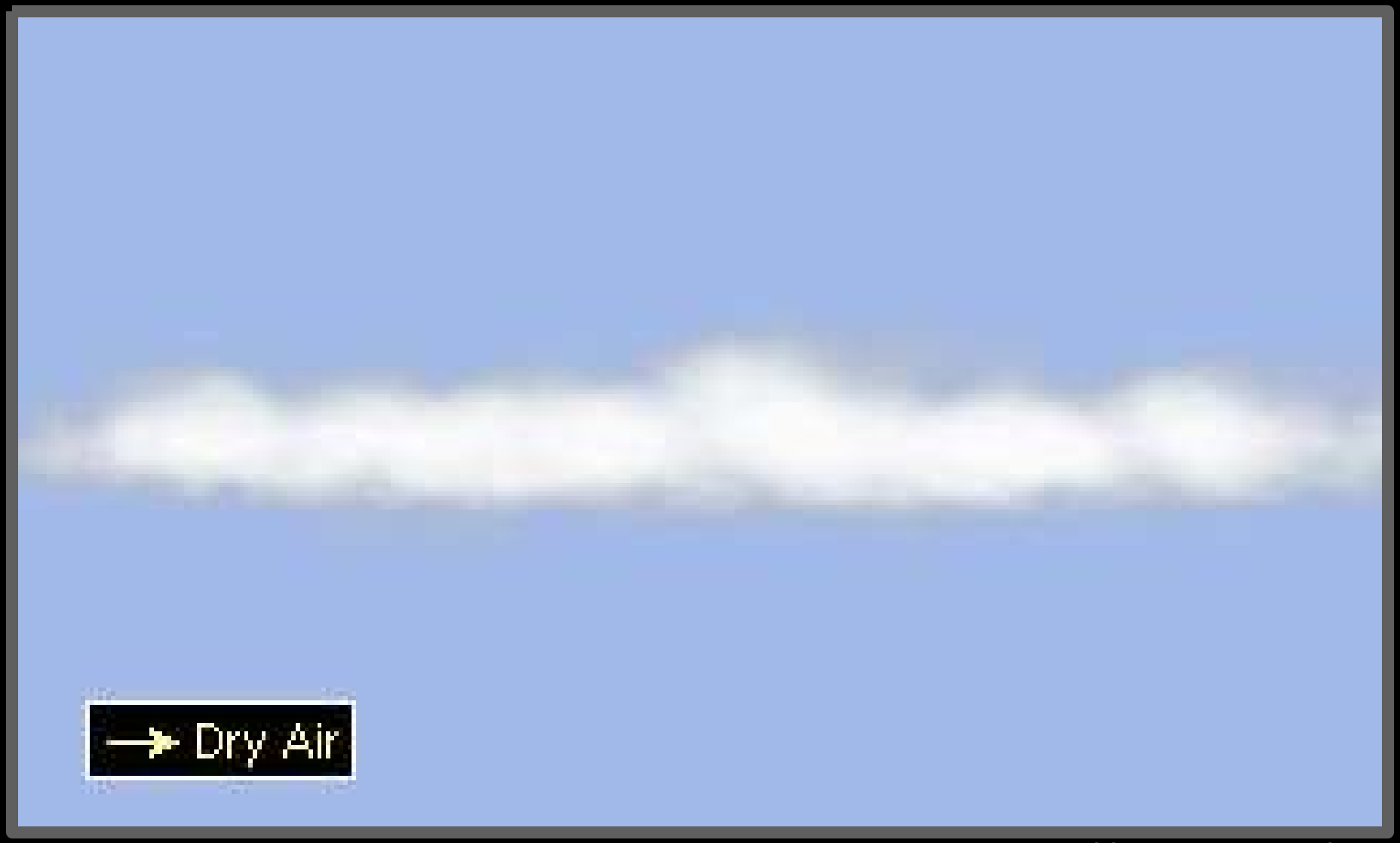
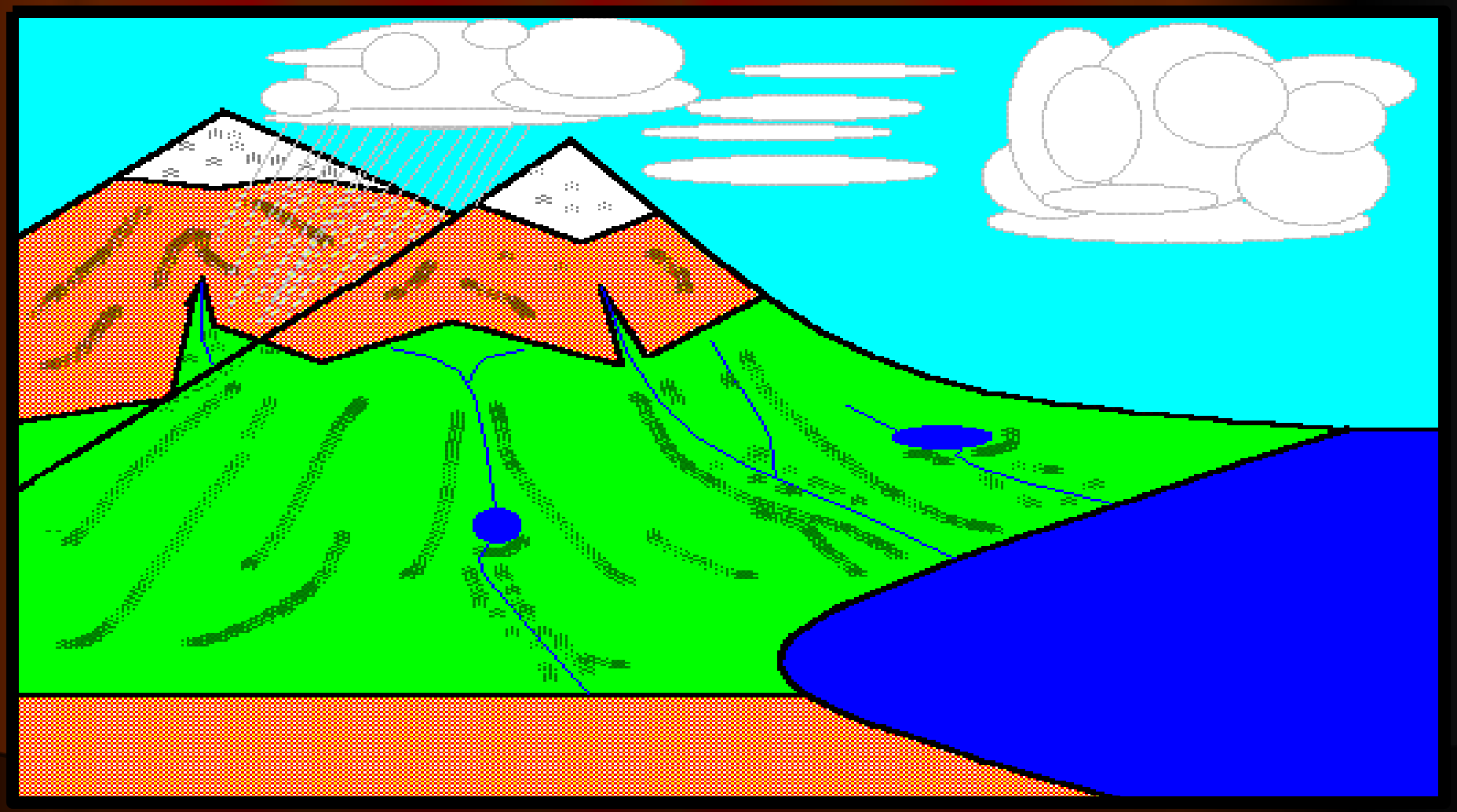


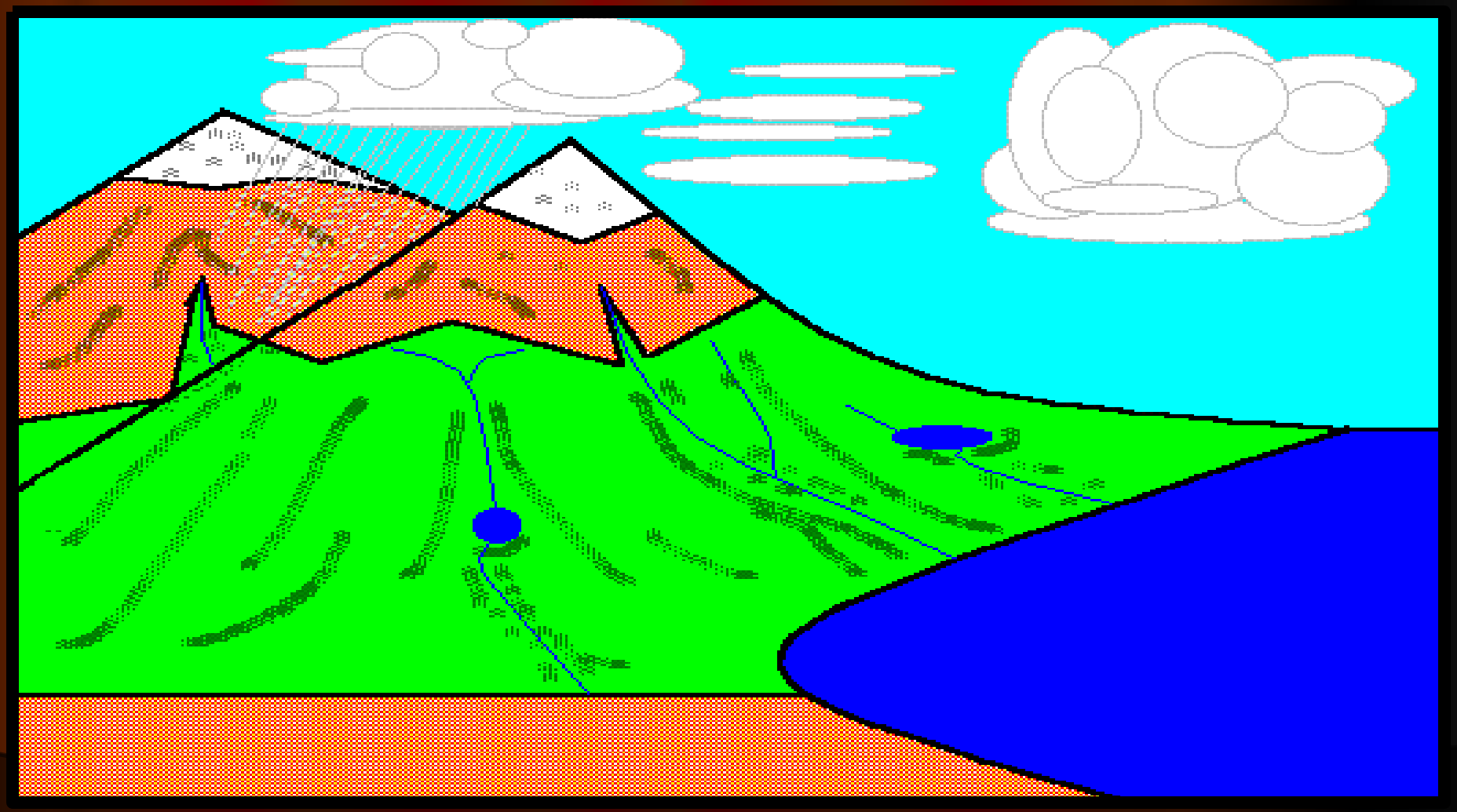
- We usually think about oceans, but clouds also evaporate.



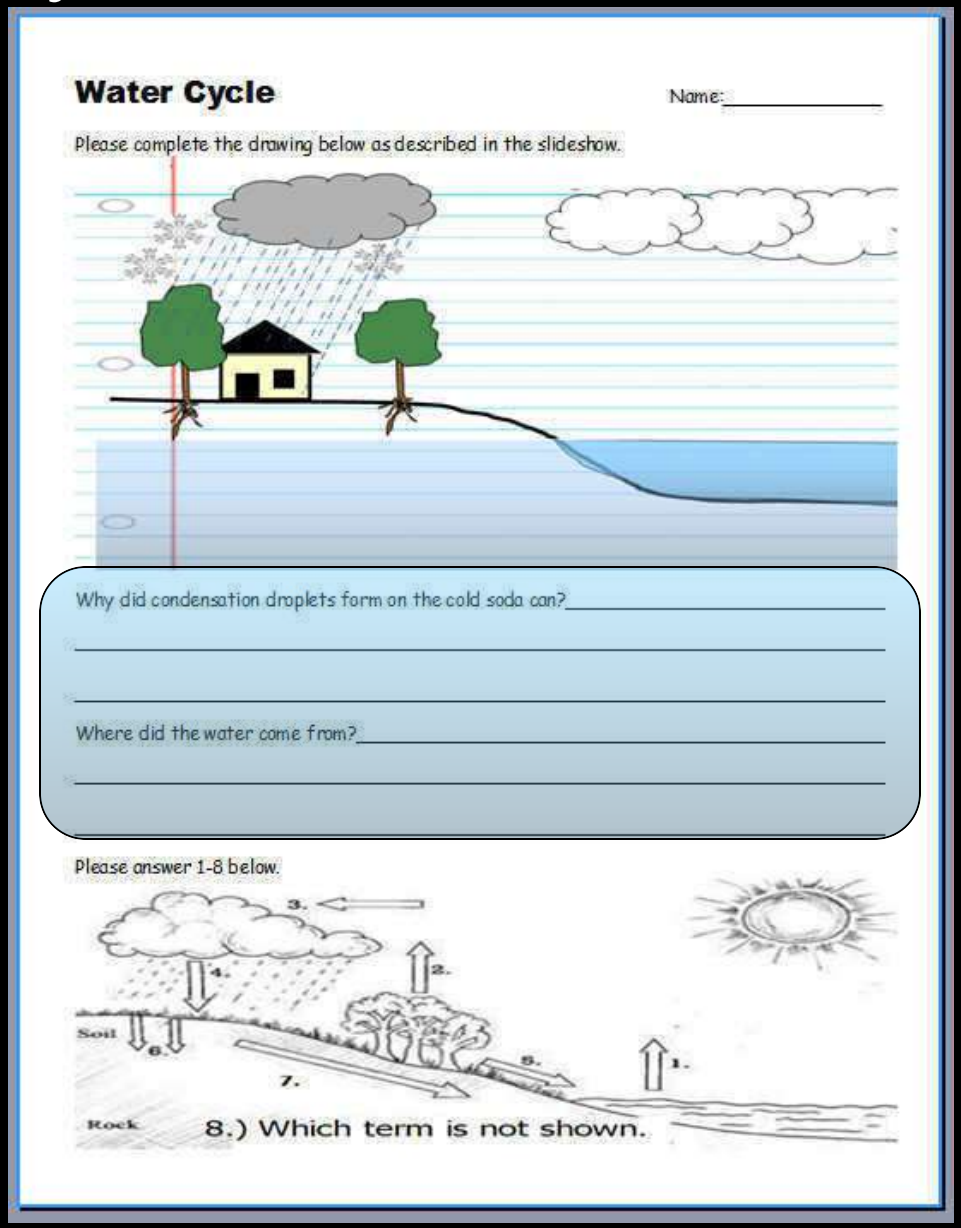
- Condensation: Water vapor (gas) turns back to a liquid. (Energy needs to be removed)
  - -



- Condensation: Water vapor (gas) turns back to a liquid. (Energy needs to be removed)
  - Cloud formation.



- Water Cycle Available Sheet



Water Cycle

Name:_____

Please complete the drawing below as described in the slideshow.

Why did condensation droplets form on the cold soda can?_____

_____

_____

Where did the water come from?_____

_____

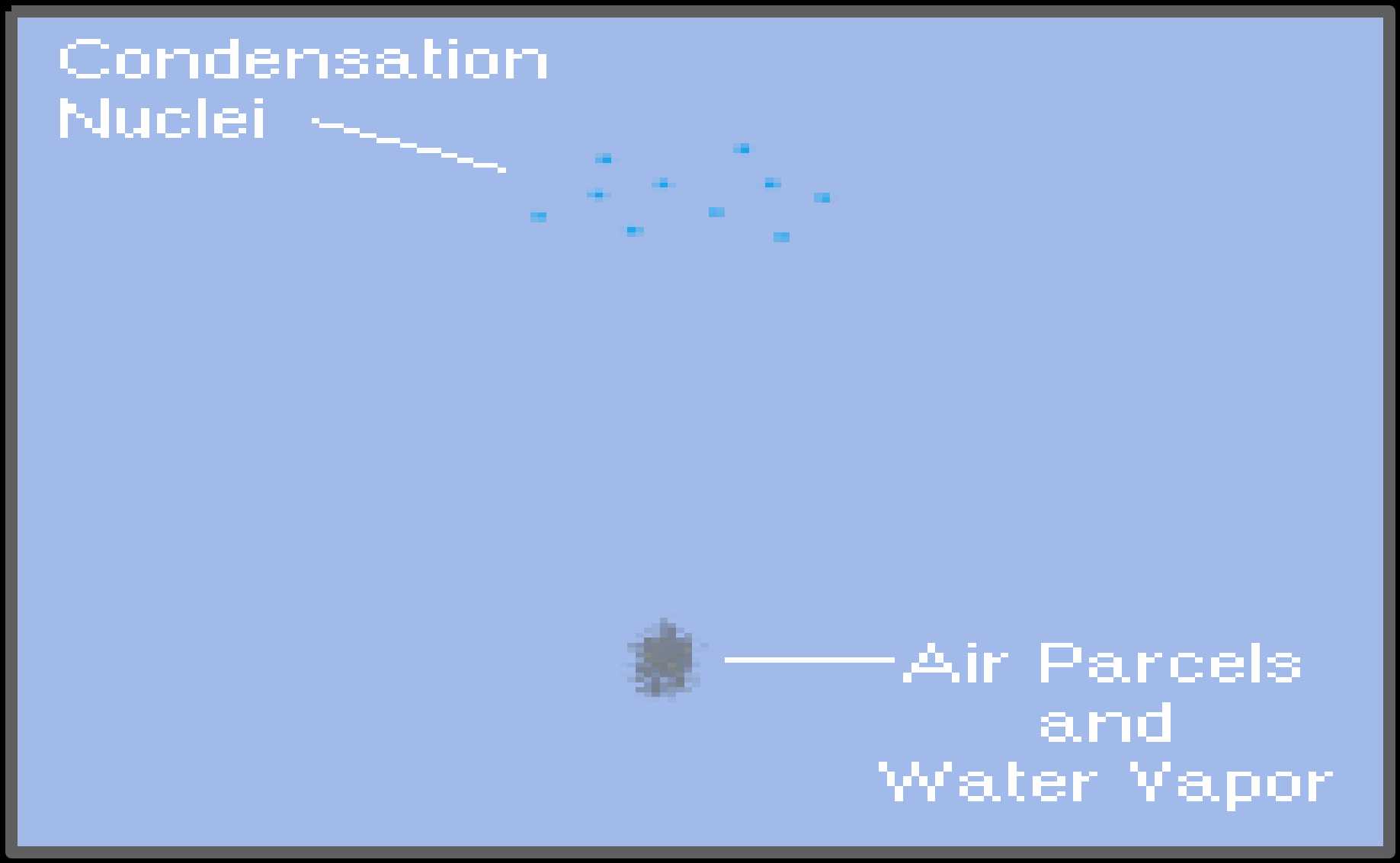
Please answer 1-8 below.

- Activity! Condensation
  - Teacher provides ice cold can of soda to table groups and students record temperature.
  - Students should observe each can for evidence of condensation.

- Activity! Condensation Questions.
  - Why did condensation droplets form on the cold soda can?
    - Where did the water come from?

- Activity! Condensation Questions.
  - Why did condensation droplets form on the cold soda can?
    - Where did the water come from?
  - Condensation formed on the cold soda can because water vapor near the soda can turned from a gas to a liquid.

- Cloud formation occurs with water vapor and condensation nuclei.

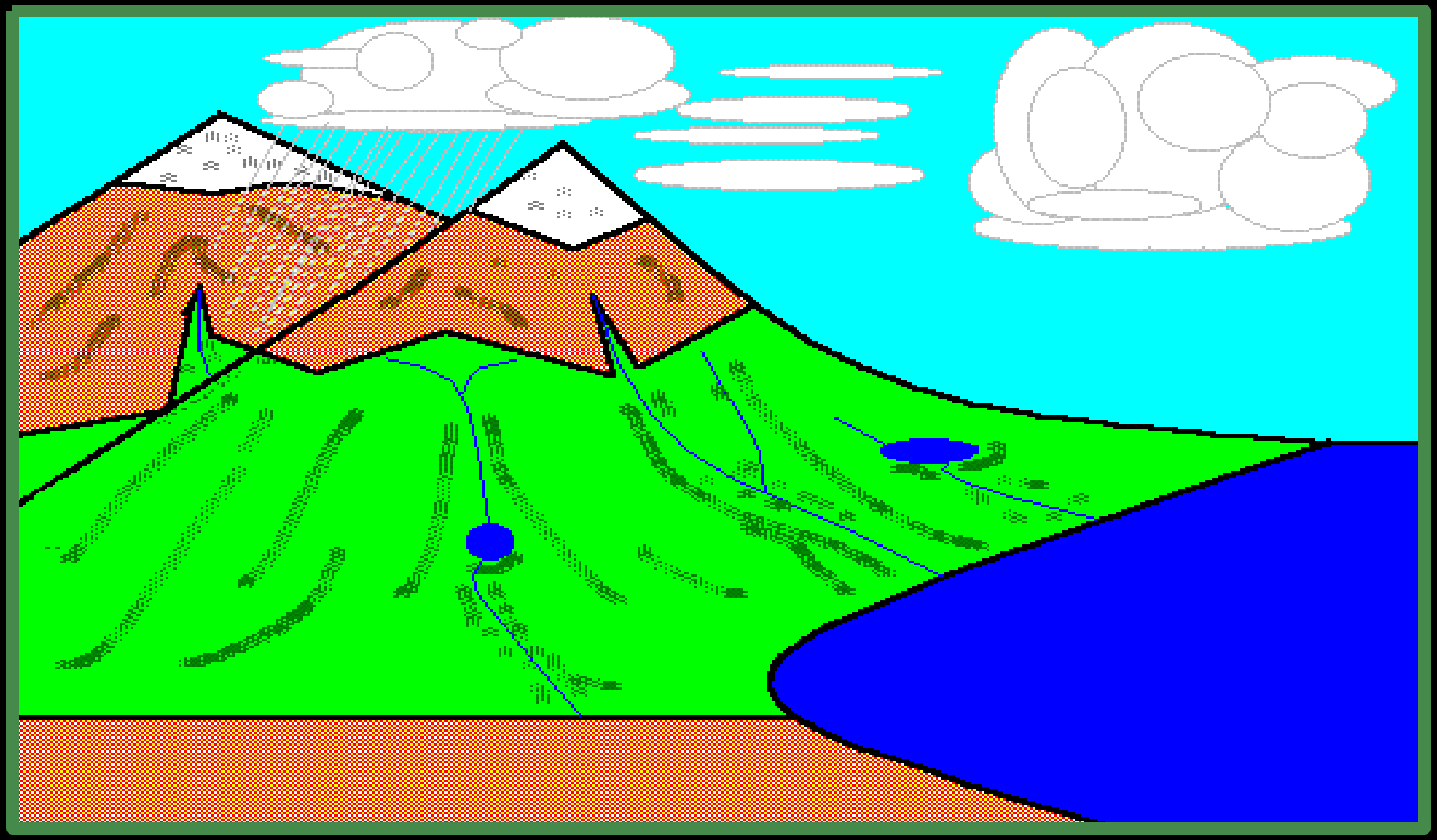


Average rain drop size - 2 millimeters

Average cloud droplet size - 0.02 millimeters

Average condensation nucleus size - 0.0002 millimeters

- Precipitation: Water that is so heavy it falls as liquid / solid.



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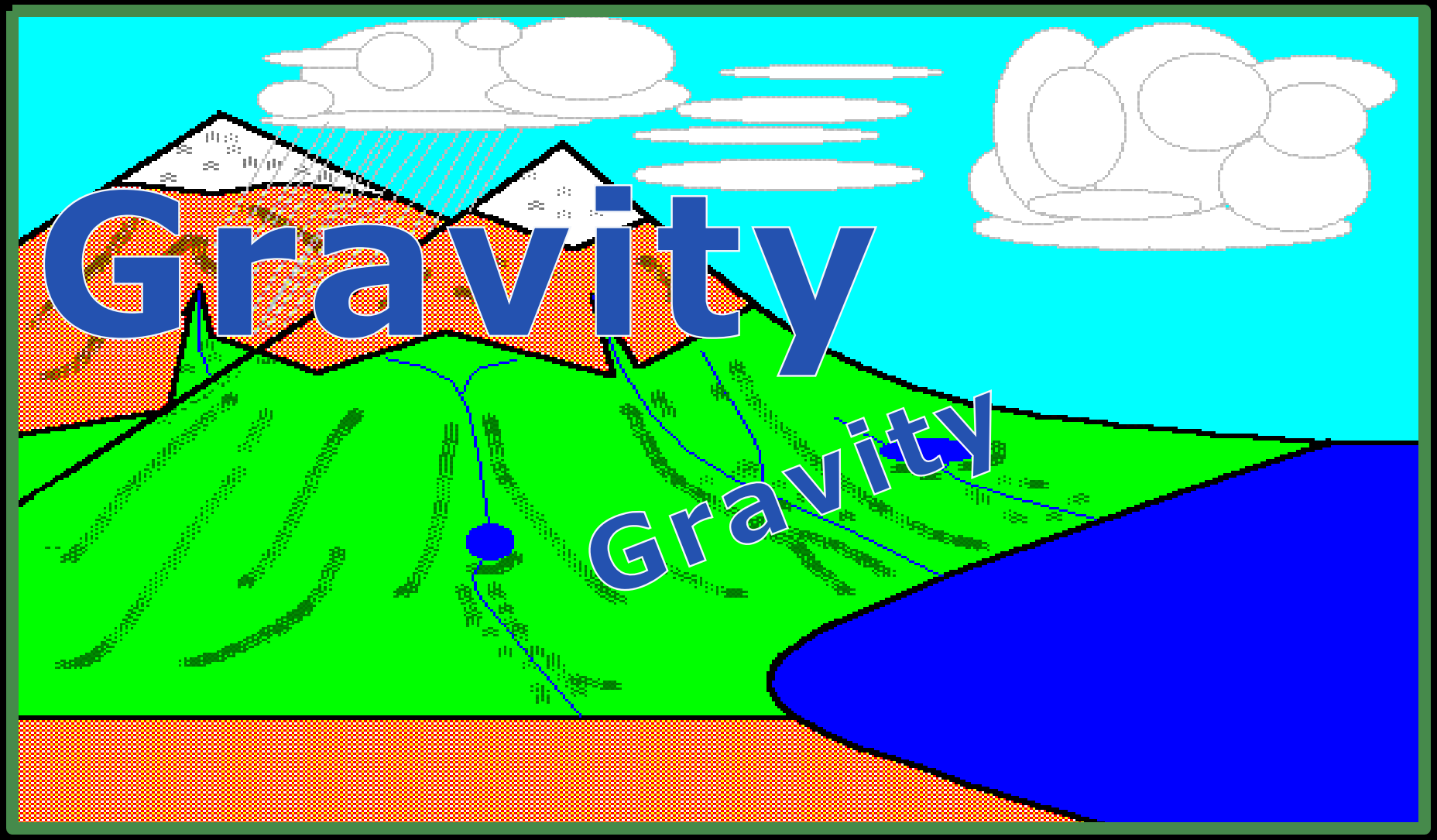
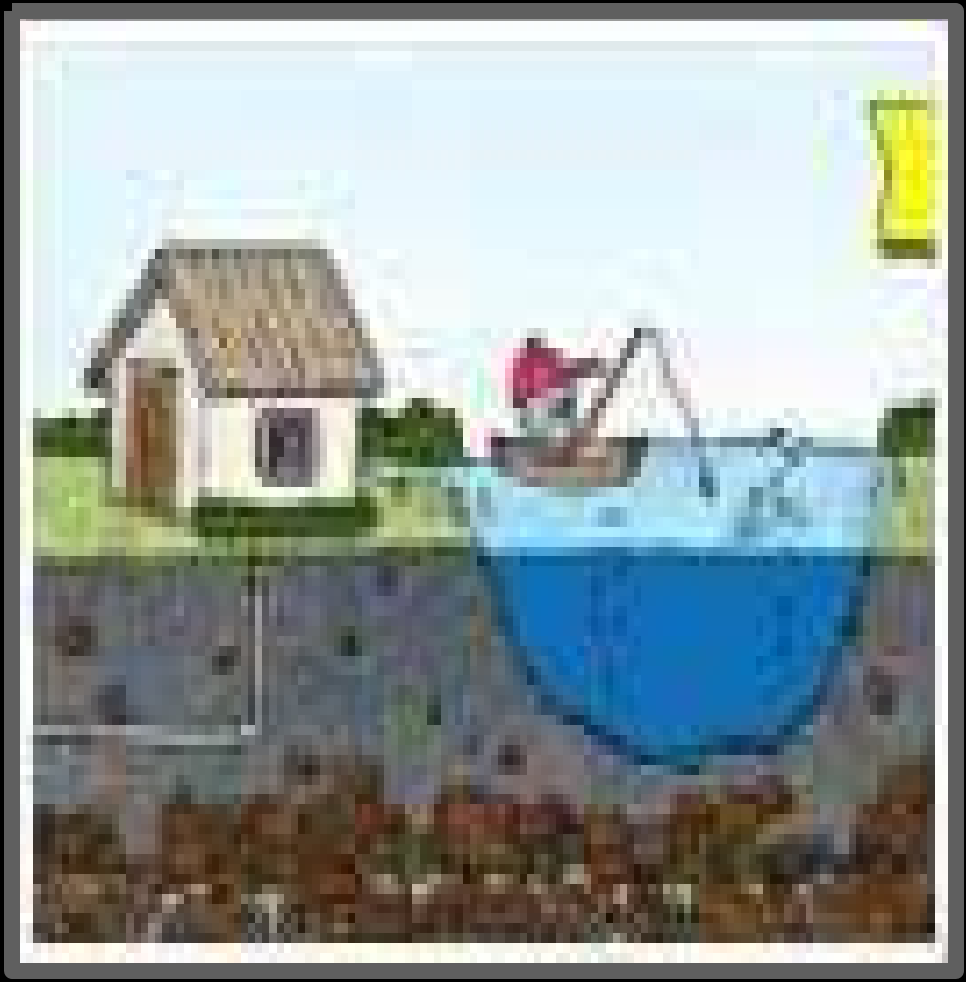
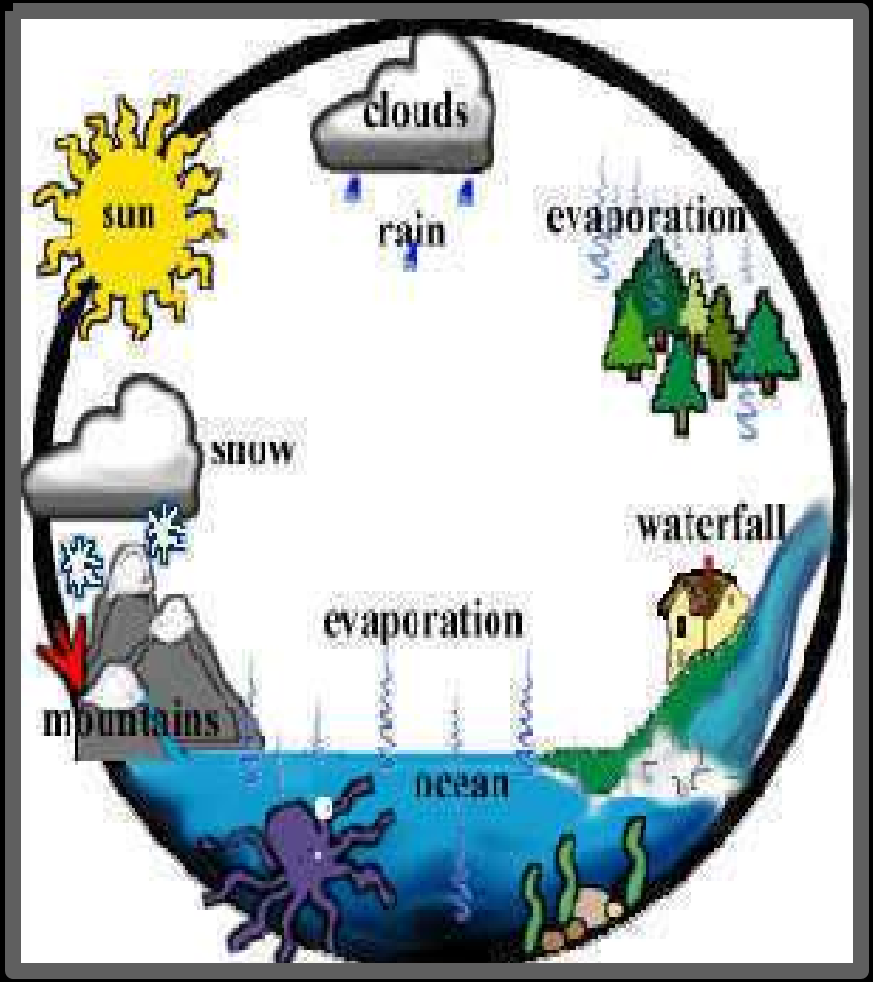


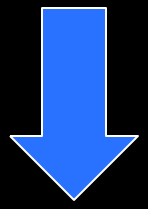
- Precipitation can also be a solid in the form of snow, hail, or ice pellets.

- Link! Water Cycle Flash Animation Tour
  - http://www.epa.gov/safewater/kids/flash/flash_watercycle.html





- Activity! Water Cycle in a Bottle.
  - Each group needs a standard 2 liter clear soda bottle cut in half about 10 cm from the top.
    - (Have teacher cut in advance)
  - Fill bottle with very warm water about 10 cm.
    - Add food coloring if you wish.
  - Slide cup into the bottle to just above the warm water with cap on.
  - Fill top bottle (cup) with ice cubes.
    - Do not overfill.
  - Watch for evaporation, condensation, and the droplets falling back down to the warm water (precipitation)
  - Visual on next slide.



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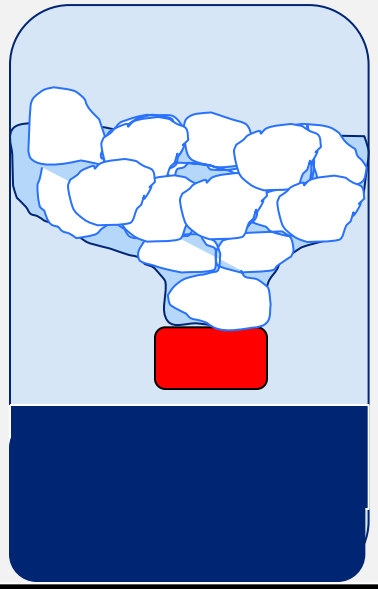
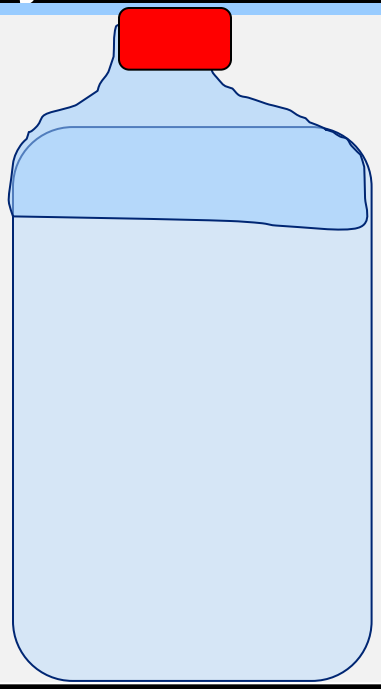
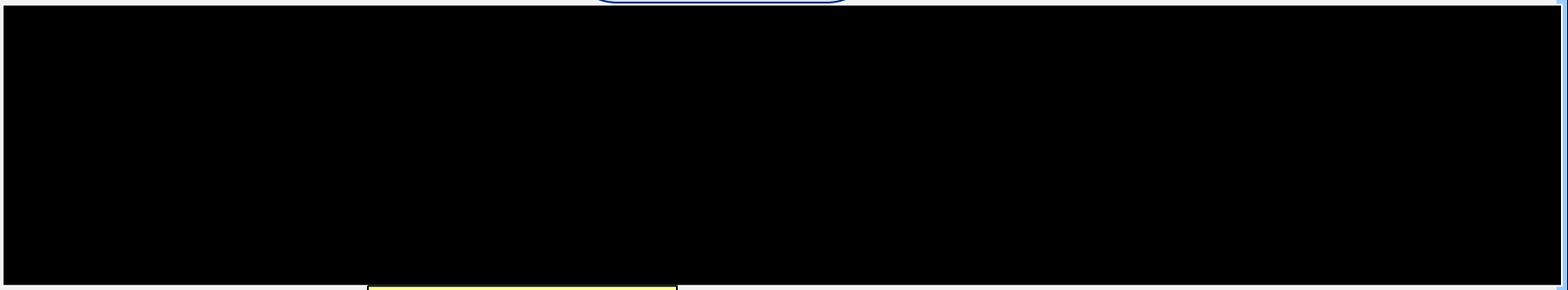
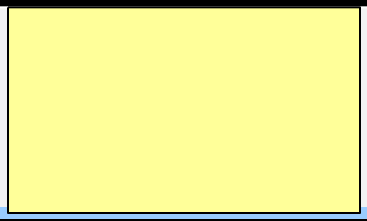


- Activity! Water Cycle in a Bottle.

Soda bottle cut by teacher,







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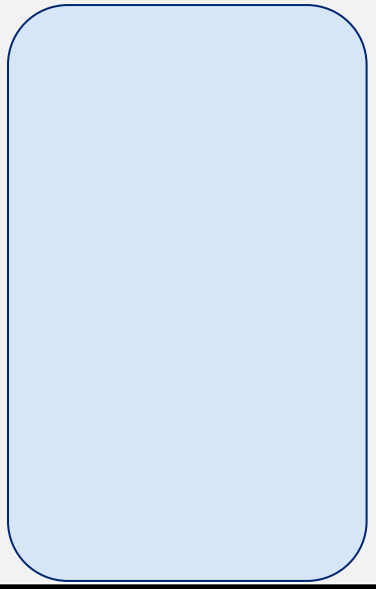

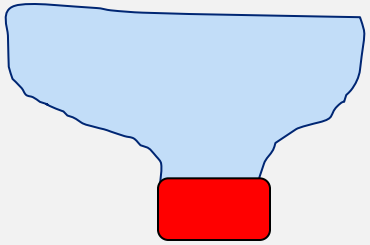

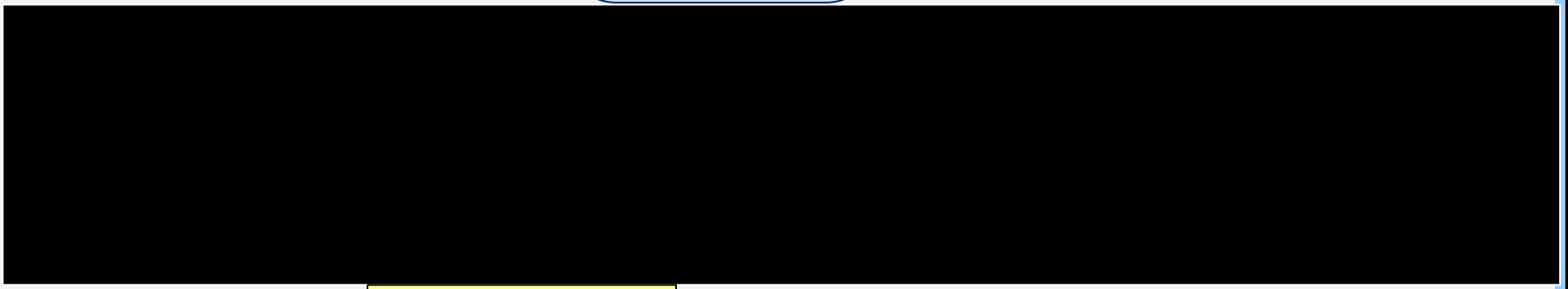

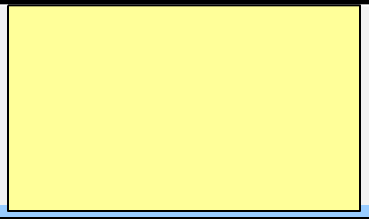

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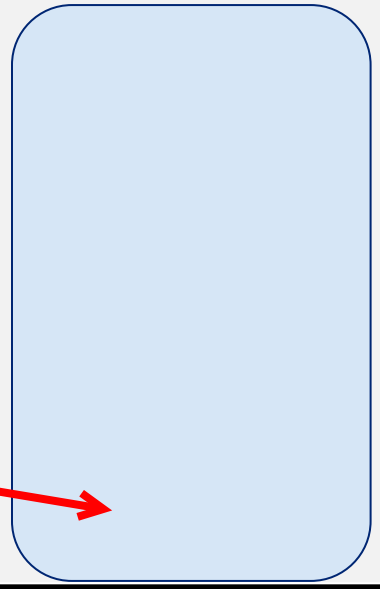
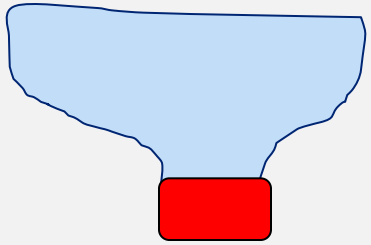
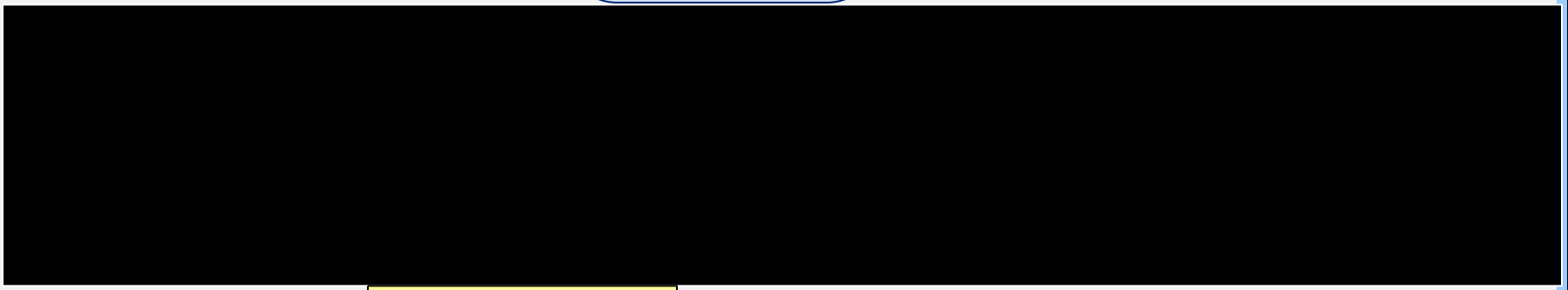
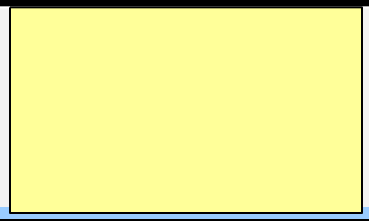




Next fill bottle with very warm water and food coloring.





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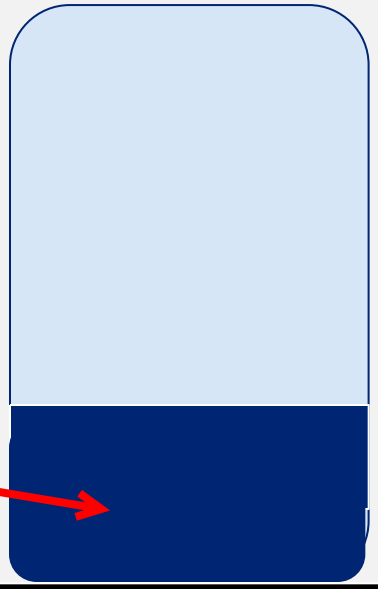
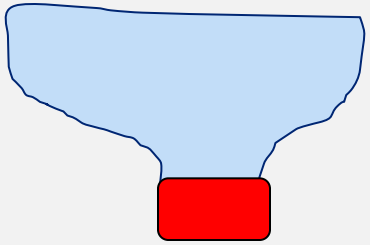
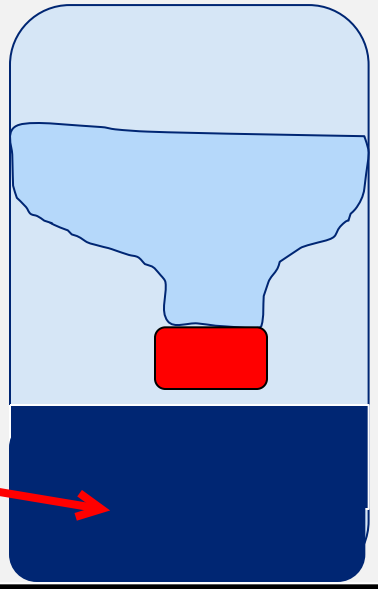




Next fill bottle with very warm water and food coloring.

- Activity! Water Cycle in a Bottle.

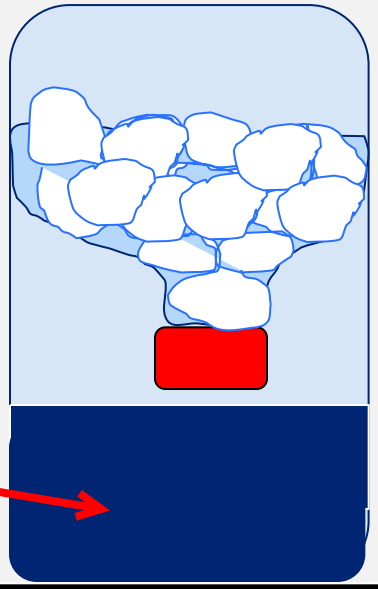
Soda bottle cut by teacher, then flipped,



Next fill bottle with very warm water and food coloring.

- Activity! Water Cycle in a Bottle.

Soda bottle cut by teacher, then flipped, and filled with ice cubes by students.



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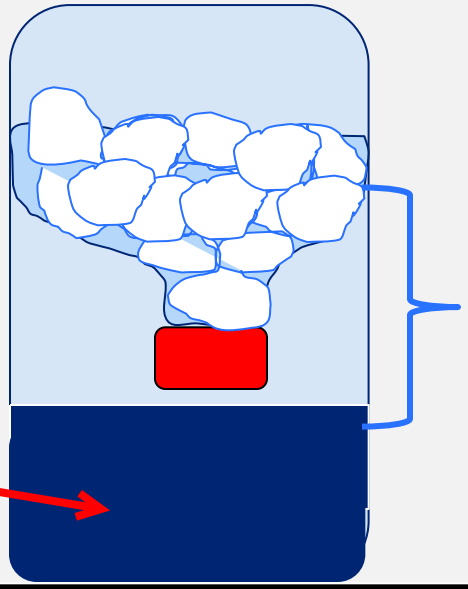

Observe water cycle and record observations

- Activity! Water Cycle in a Bottle.

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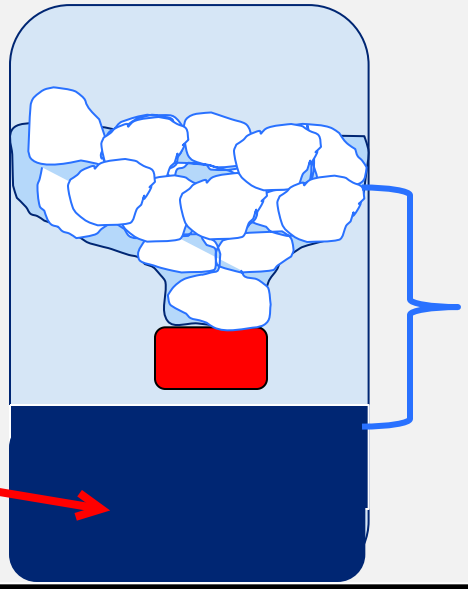


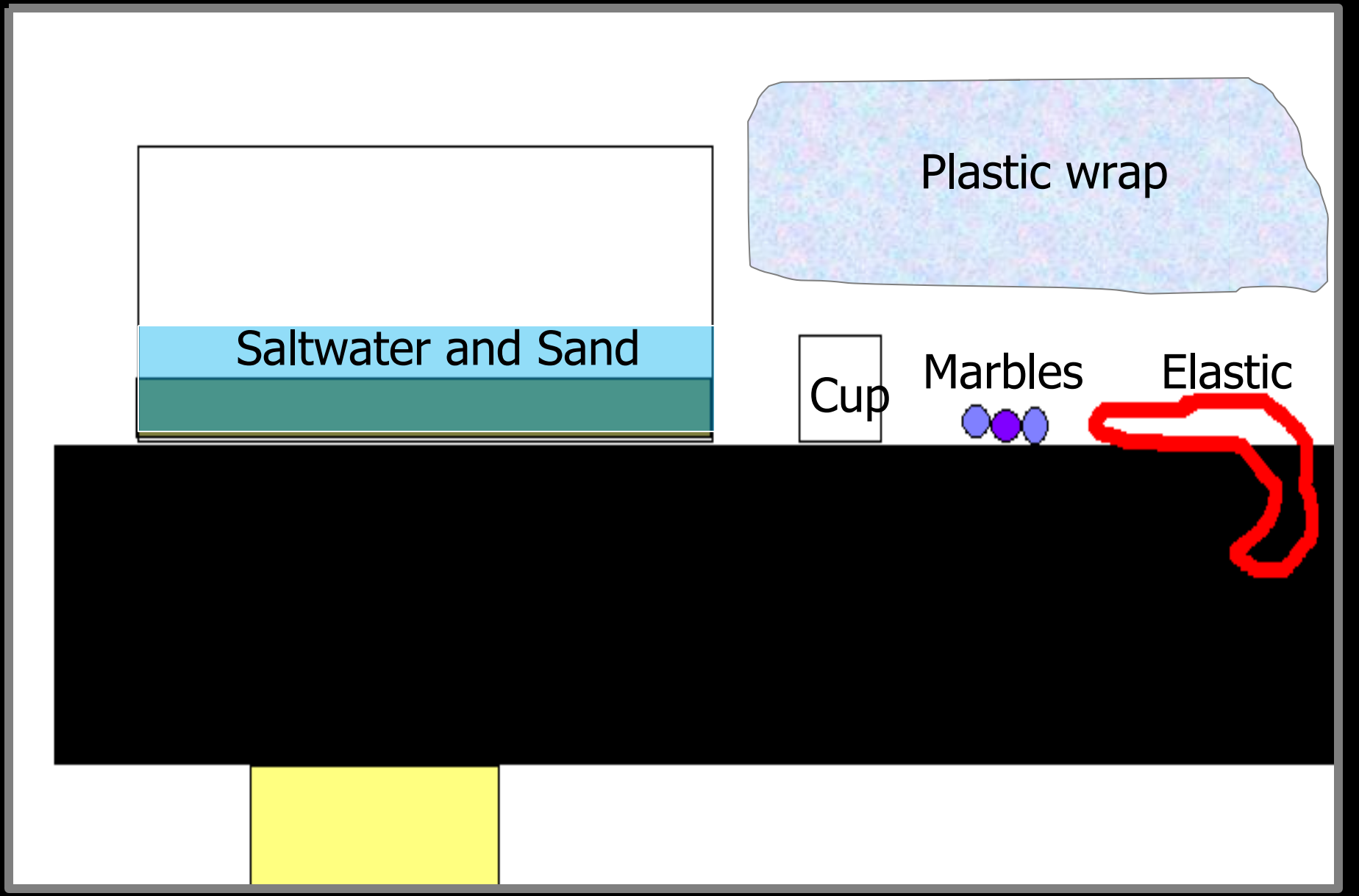
Observe water cycle and record observations

Strange kind of creepy video of water molecules in the hydrologic cycle as we wait (Optional 2 min)

- Activity! Stranded on a Desert Island.

- Activity! Stranded on a Desert Island.
  - You and your group must use the materials provided (and the water cycle) to turn salt water into freshwater over the next several days in order to survive. Use the sun as the energy source.
  - Each group gets a clear plastic box, glass cup, plastic wrap, marbles / pebbles, salt water mixed with sand, and a bungee cord / large elastic.
  - Visual of materials on next slide.
  - Video Link of set-up.
  - https://www.youtube.com/watch?v=4sqRvUzqDCE

- Materials for the set-up.



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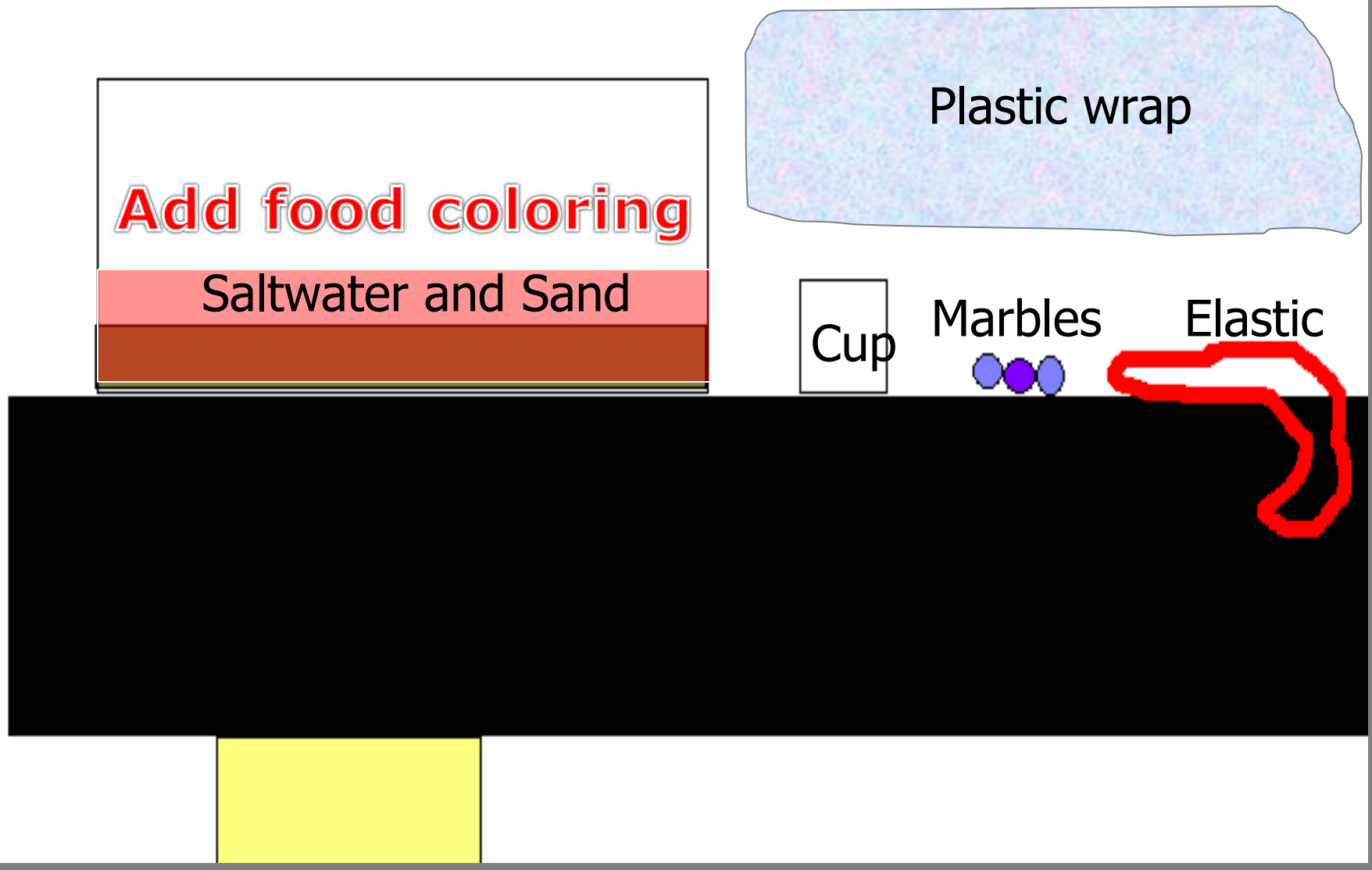
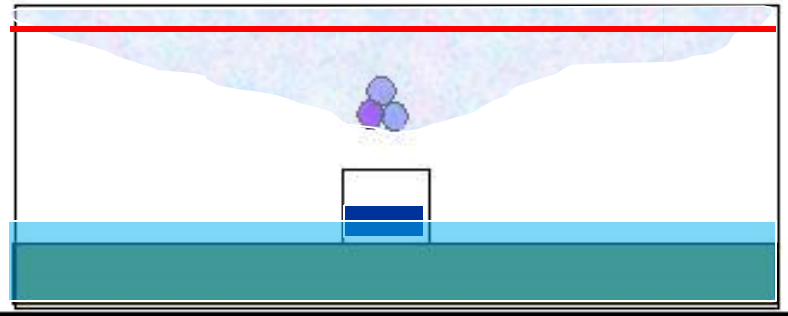


- Below is the correct set-up to use the water cycle to turn salt water into freshwater.



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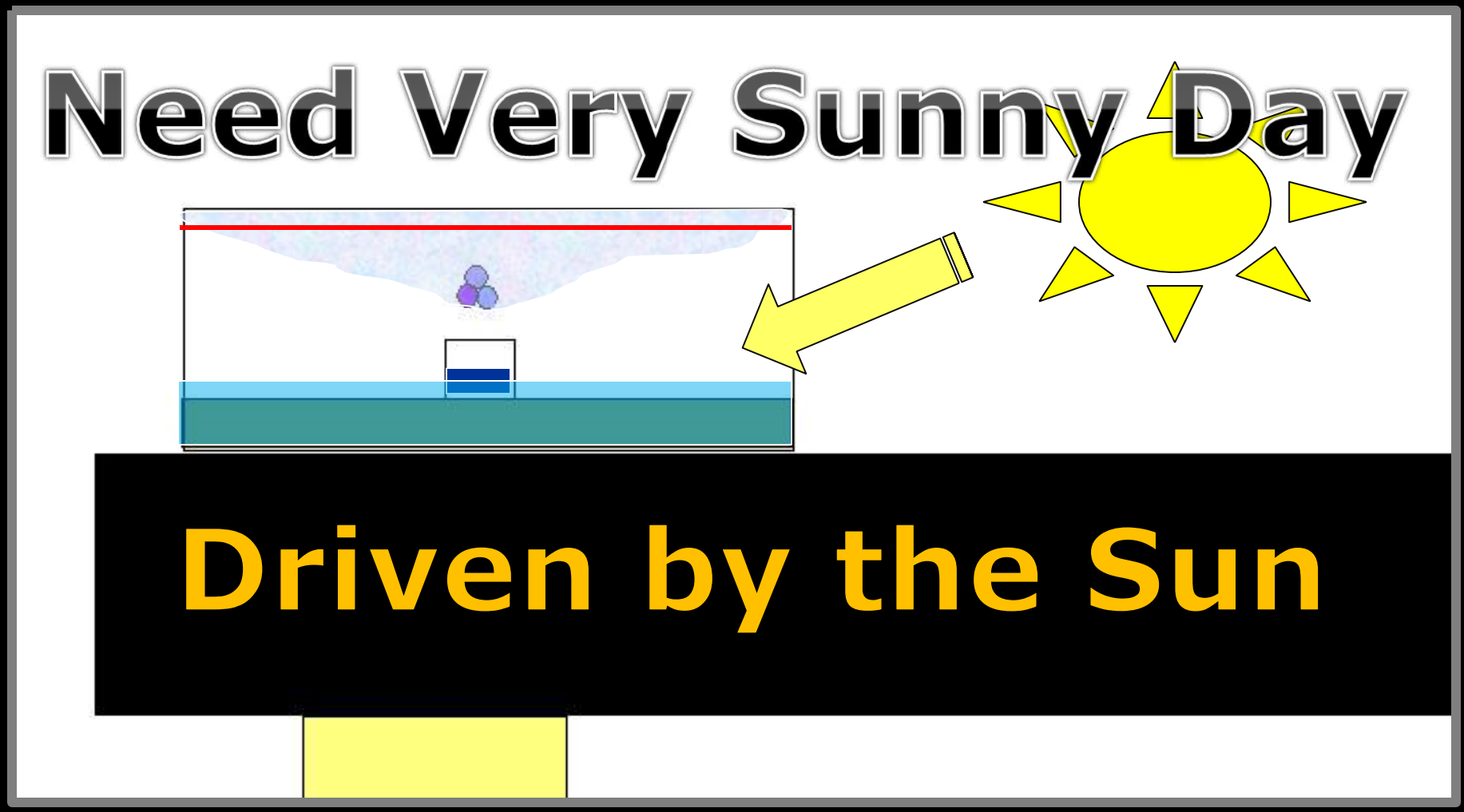

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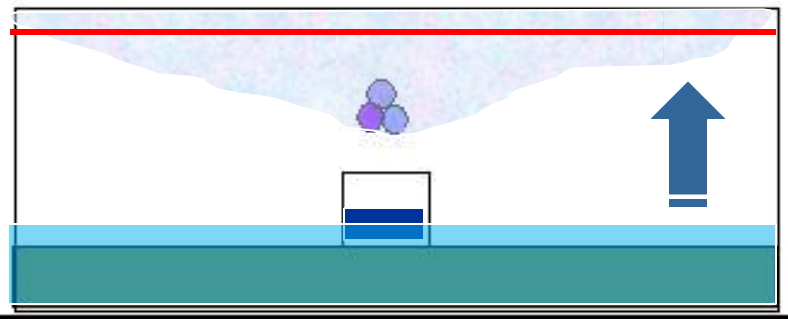
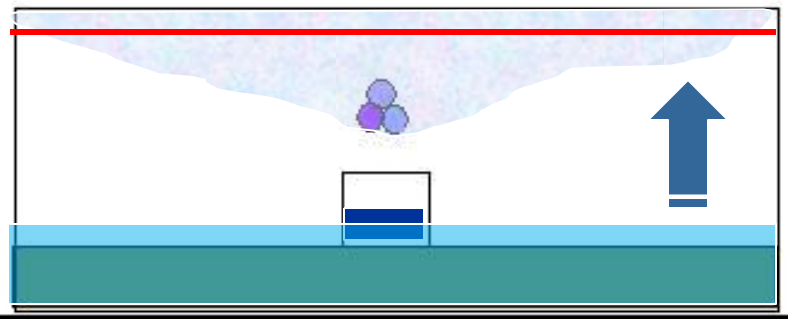


Saltwater [redacted] from sun energy into vapor.

- Below is the correct set-up to use the water cycle to turn salt water into freshwater.



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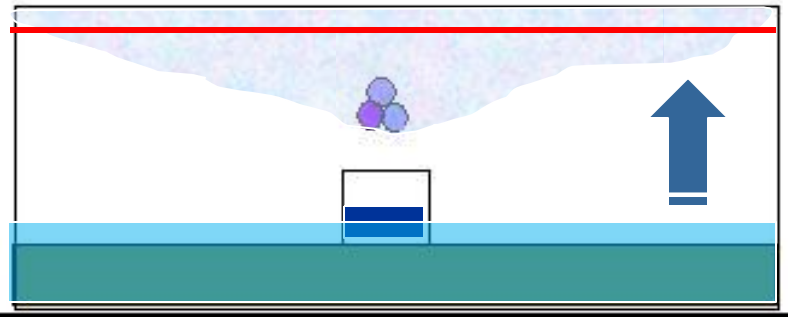
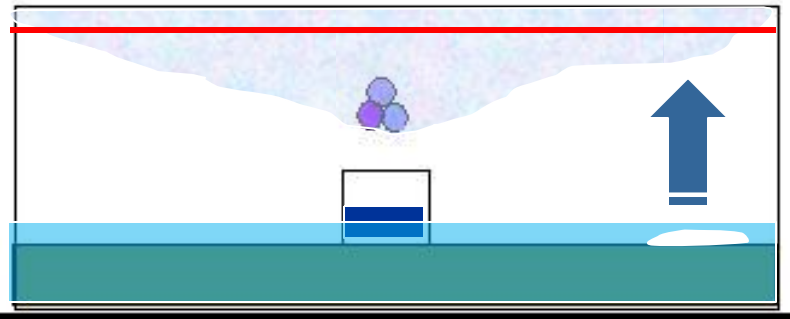


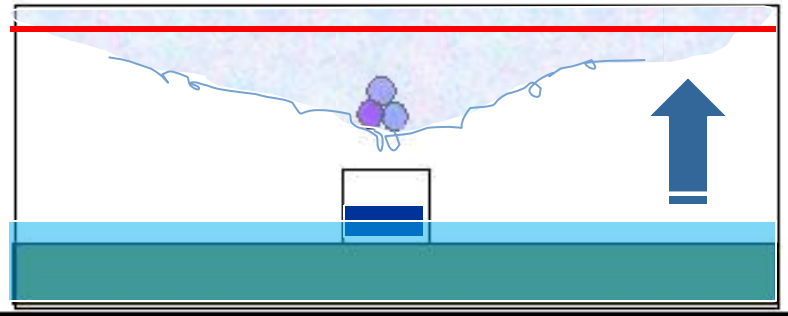
Saltwater evaporates from sun energy into vapor.

- Below is the correct set-up to use the water cycle to turn salt water into freshwater.



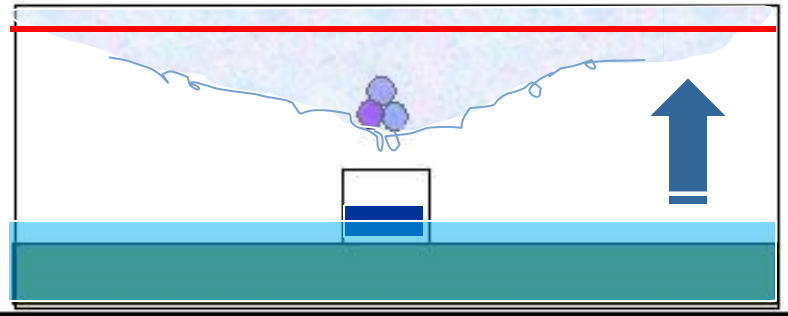
Saltwater evaporates from sun energy into vapor
Leaves salt behind.

- Below is the correct set-up to use the water cycle to turn salt water into freshwater.



Colder temperatures on edge of container cause…

- Below is the correct set-up to use the water cycle to turn salt water into freshwater.



Colder temperatures on edge of container cause…
<u>Condensation</u>

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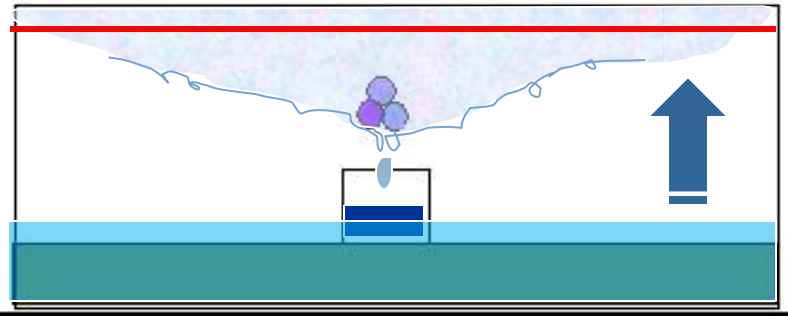
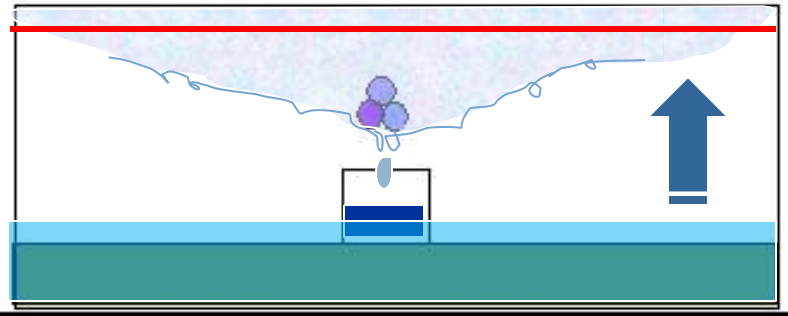


Water adheres to the plastic wrap, travels down and falls into the cup as freshwater…

- Below is the correct set-up to use the water cycle to turn salt water into freshwater.



Water adheres to the plastic wrap, travels down and falls into the cup as freshwater…
<u>Precipitation</u>

- Below is the correct set-up to use the water cycle to turn salt water into freshwater.

- Sublimation: Solid state turns directly to a gas state skipping liquid phase.

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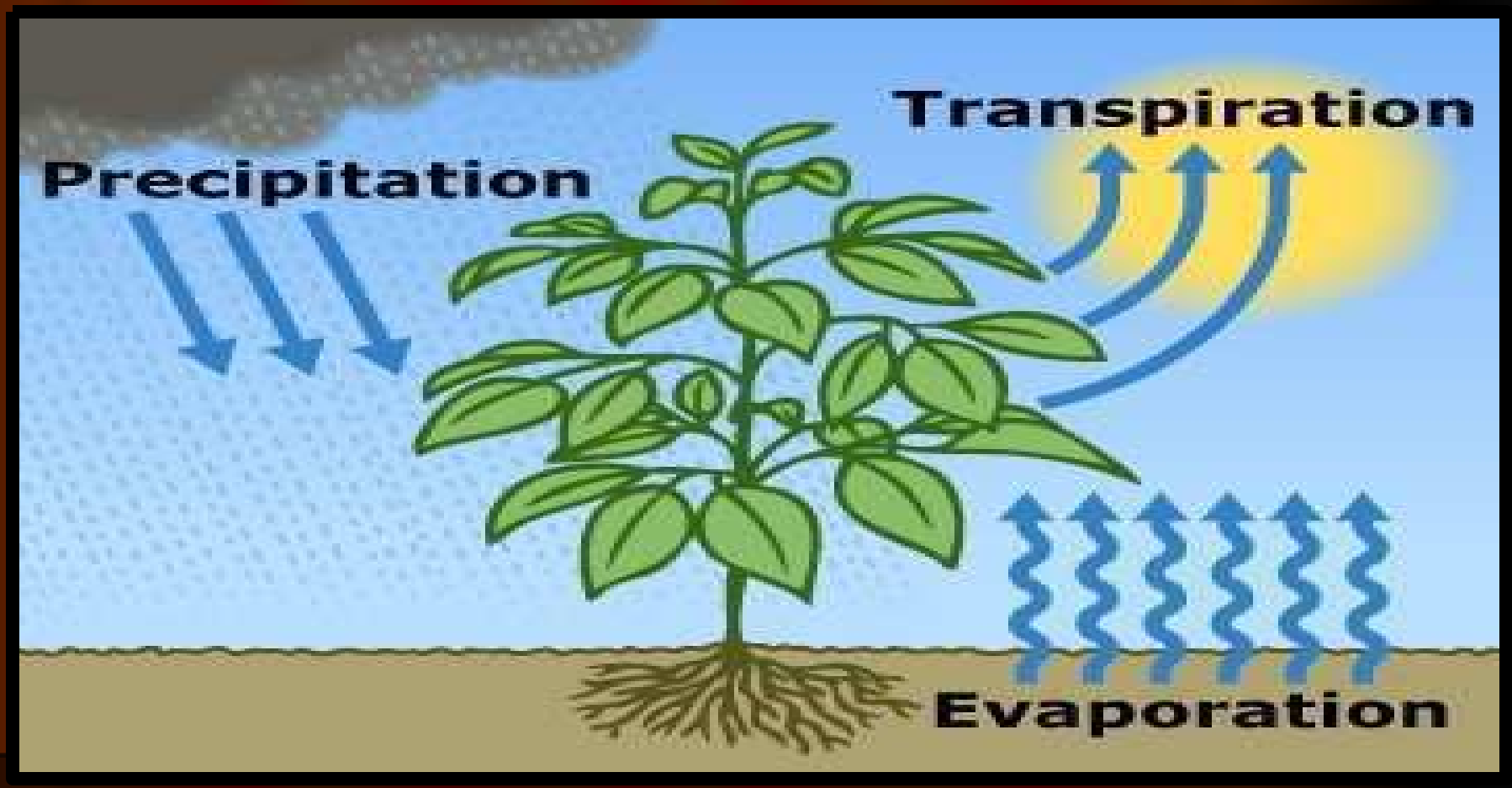
See neat dry Ice Bubble: Sublimation (solid to gas) at…
https://www.youtube.com/watch?v=76CNkxizQuc 2 min


Solid

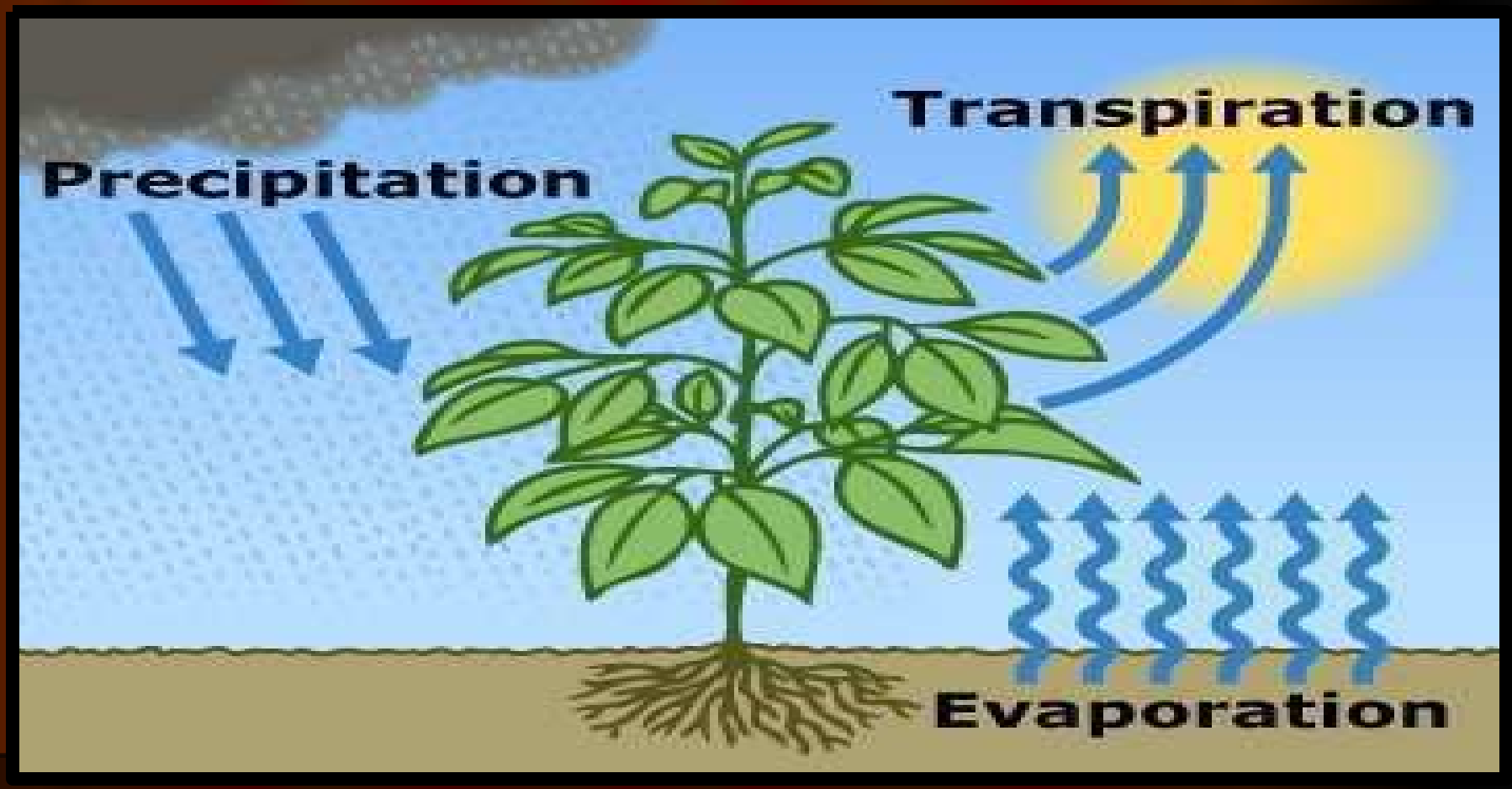

Solid


Gas
Solid

- Transpiration – Water released by plants into air.
  -



- Transpiration – Water released by plants into air.
  - Non-living to the living, and back again.



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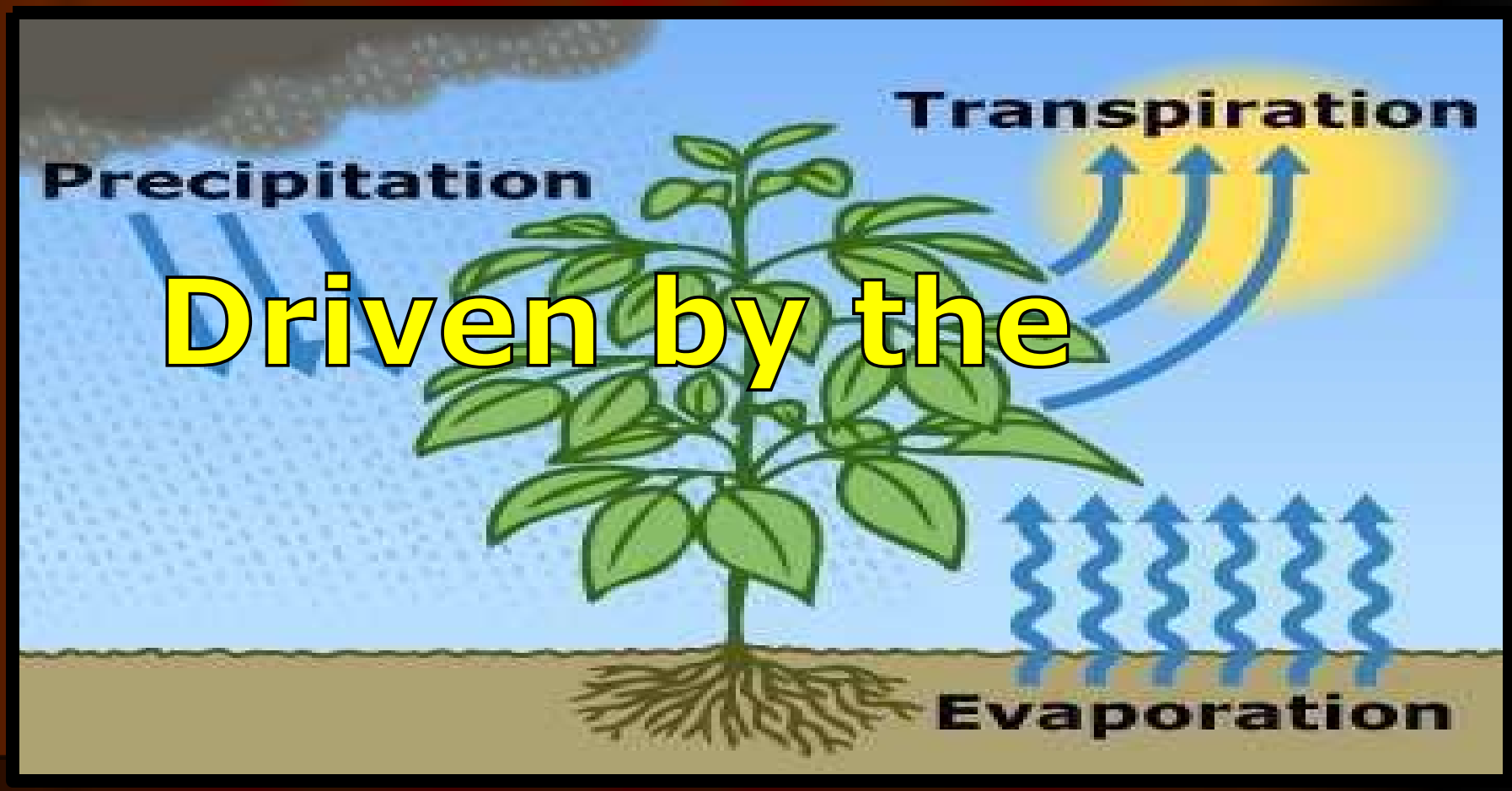
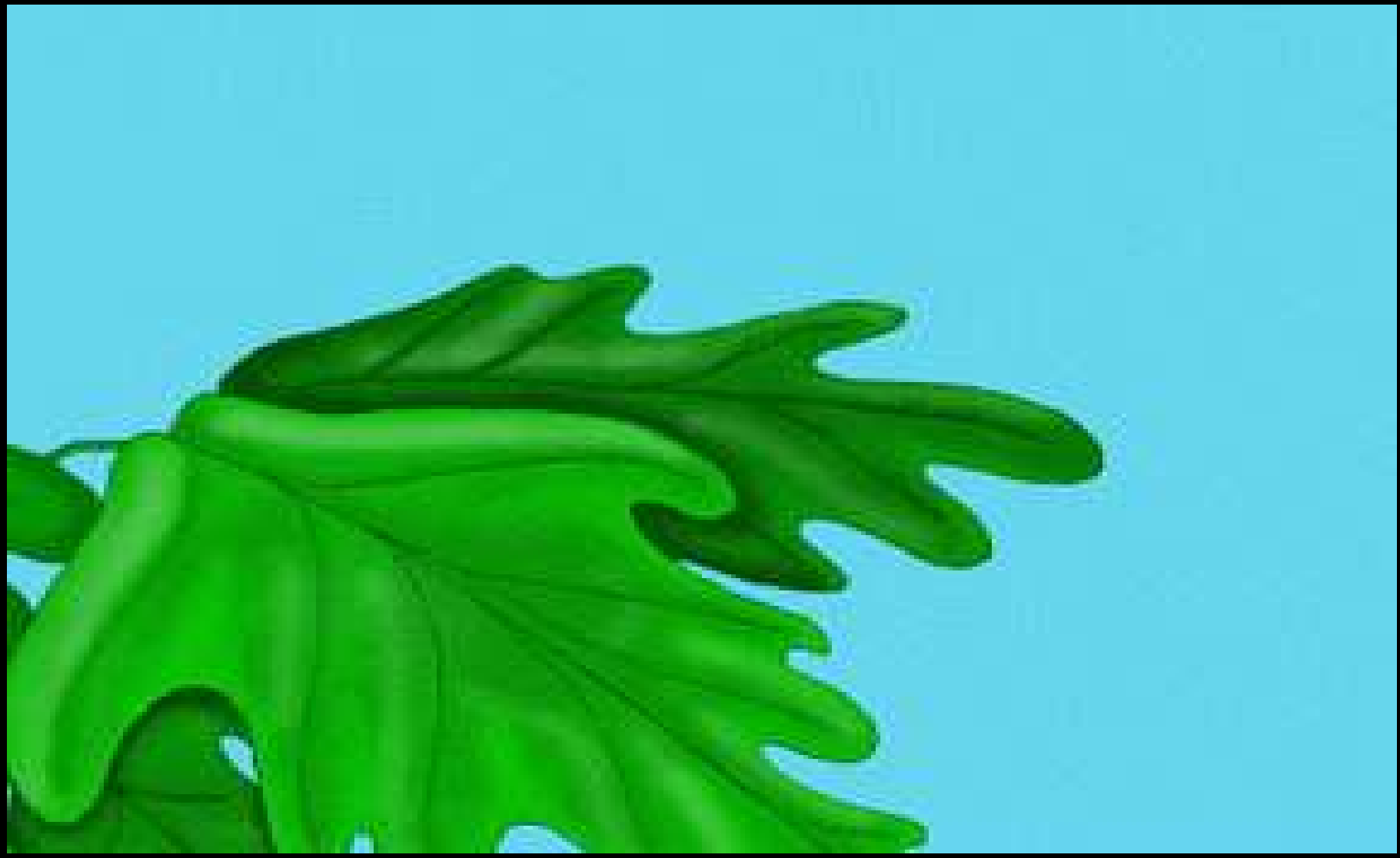


- Transpiration – Water released by plants into air.
  - Non-living to the living, and back again.

- Does this animation look like a water molecule leaving the leaf or a face?



- Evapotranspiration is a vital component to the rainforest ecosystem.

- Evapotranspiration is a vital component to the rainforest ecosystem.
  - Evapotranspiration describes water that is turned into a gas by evaporation, and water vapor released by plants (transpiration).

- Activity! Transpiration.

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  - Place a clear plastic bag over a section of plant.

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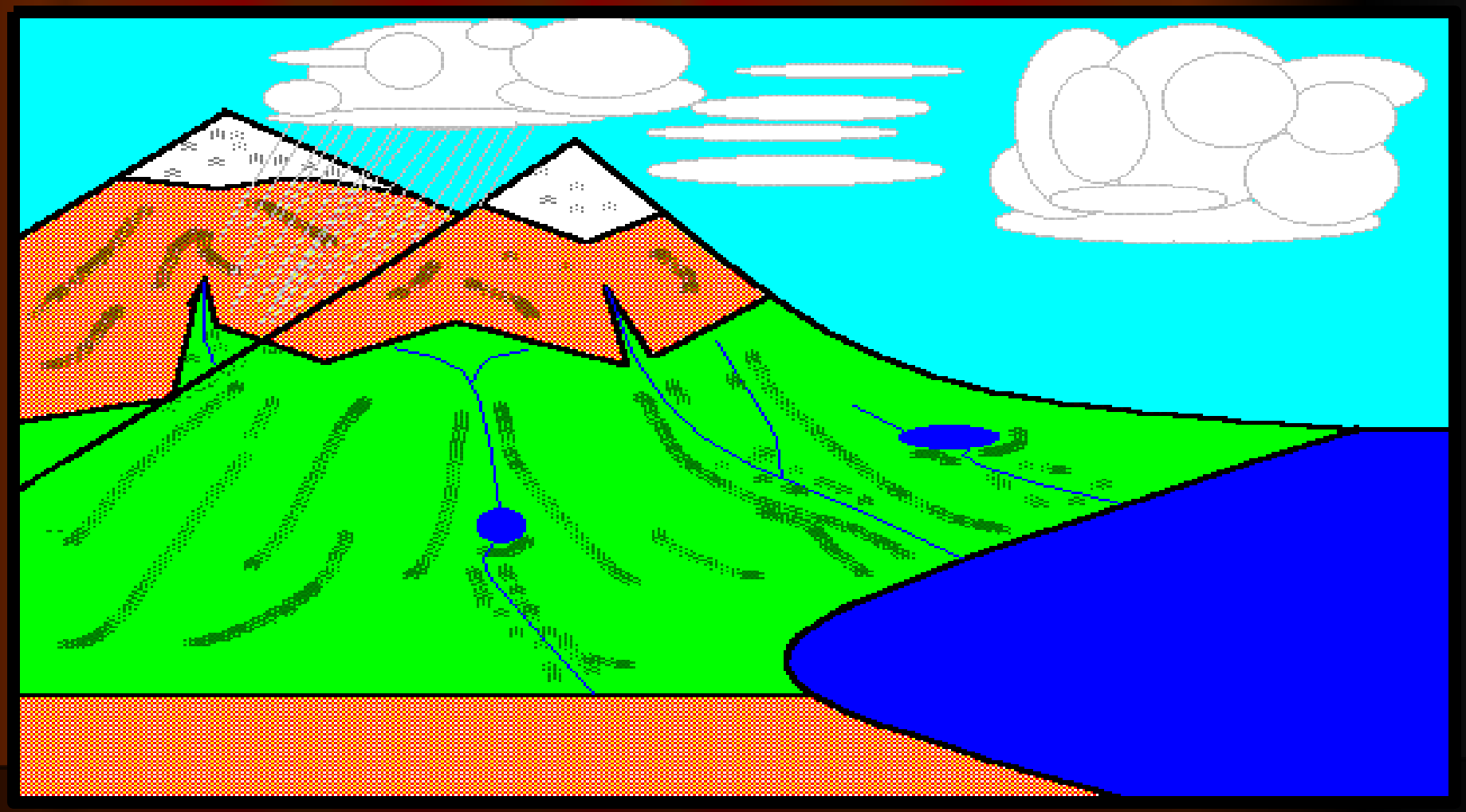
- Activity! Transpiration.
  - Place a clear plastic bag over a section of plant.
  - Secure bag at base of stem so it's relatively tight.
  - Water plant and set in the sun.
  - Observe water droplets / evidence of transpiration the next day.

Simulated Results

Simulated Results

Alternative method / extension at…
http://gcuonline.georgian.edu/wootton/transpiration.htm

- Surface run-off: The water flow which occurs when soil is full to capacity and excess water travels over the land.



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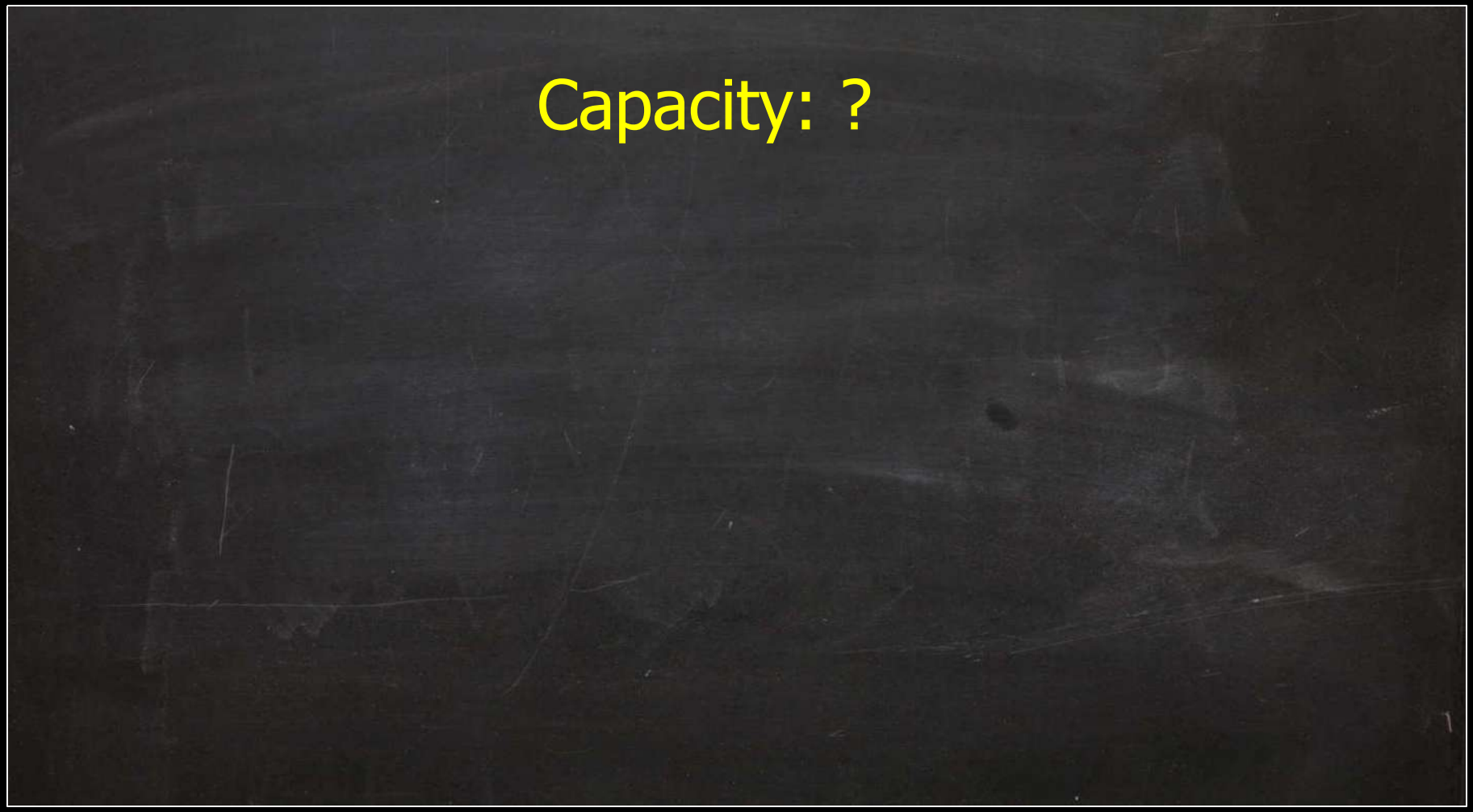
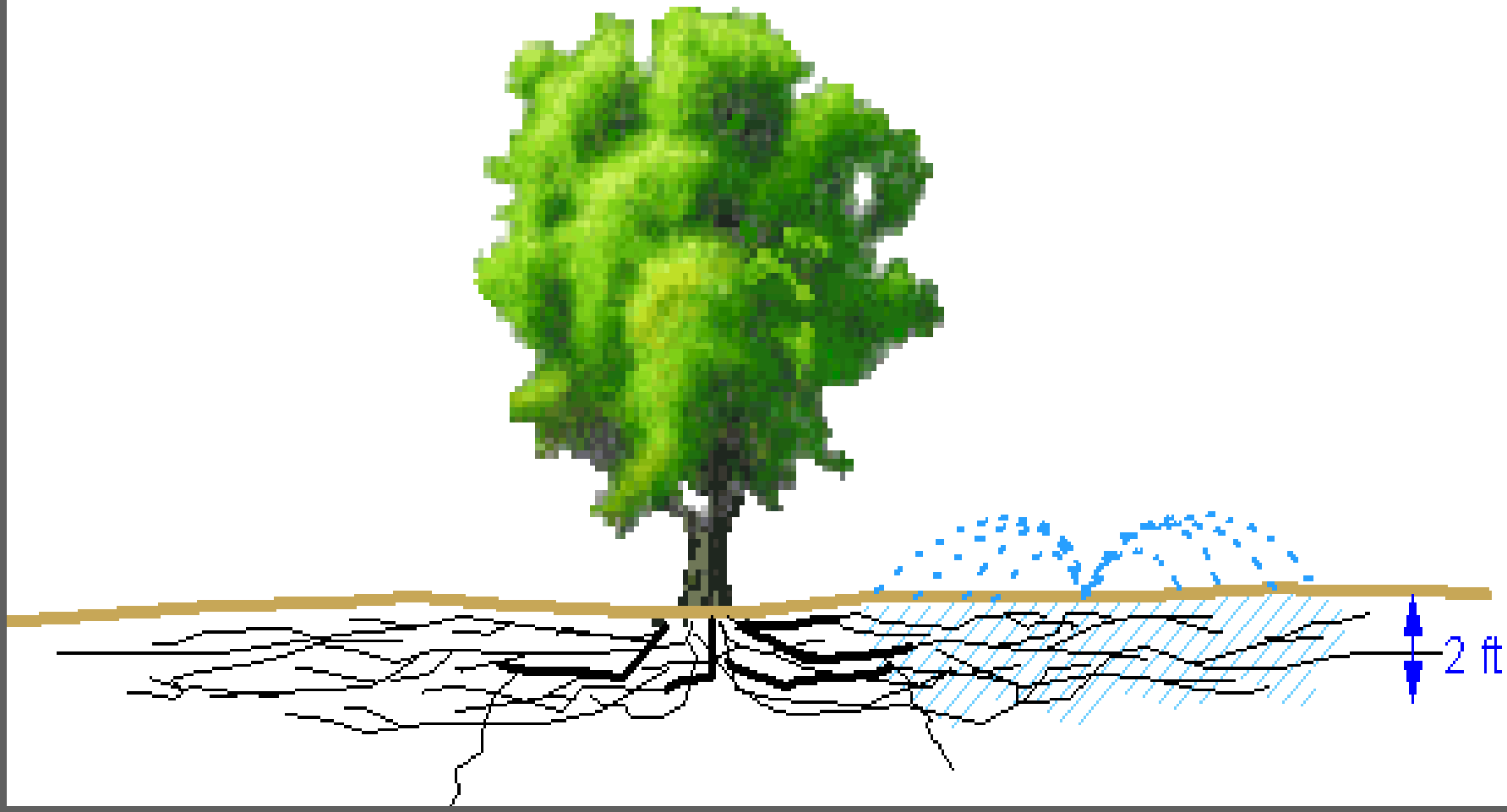


- Surface run-off: The water flow which occurs when soil is full to capacity and excess water travels over the land.

Capacity: The maximum amount that can be obtained in a body.

- Storage of water in vegetation.
  - Plants soak up and hold water. They are very good flood preventers.



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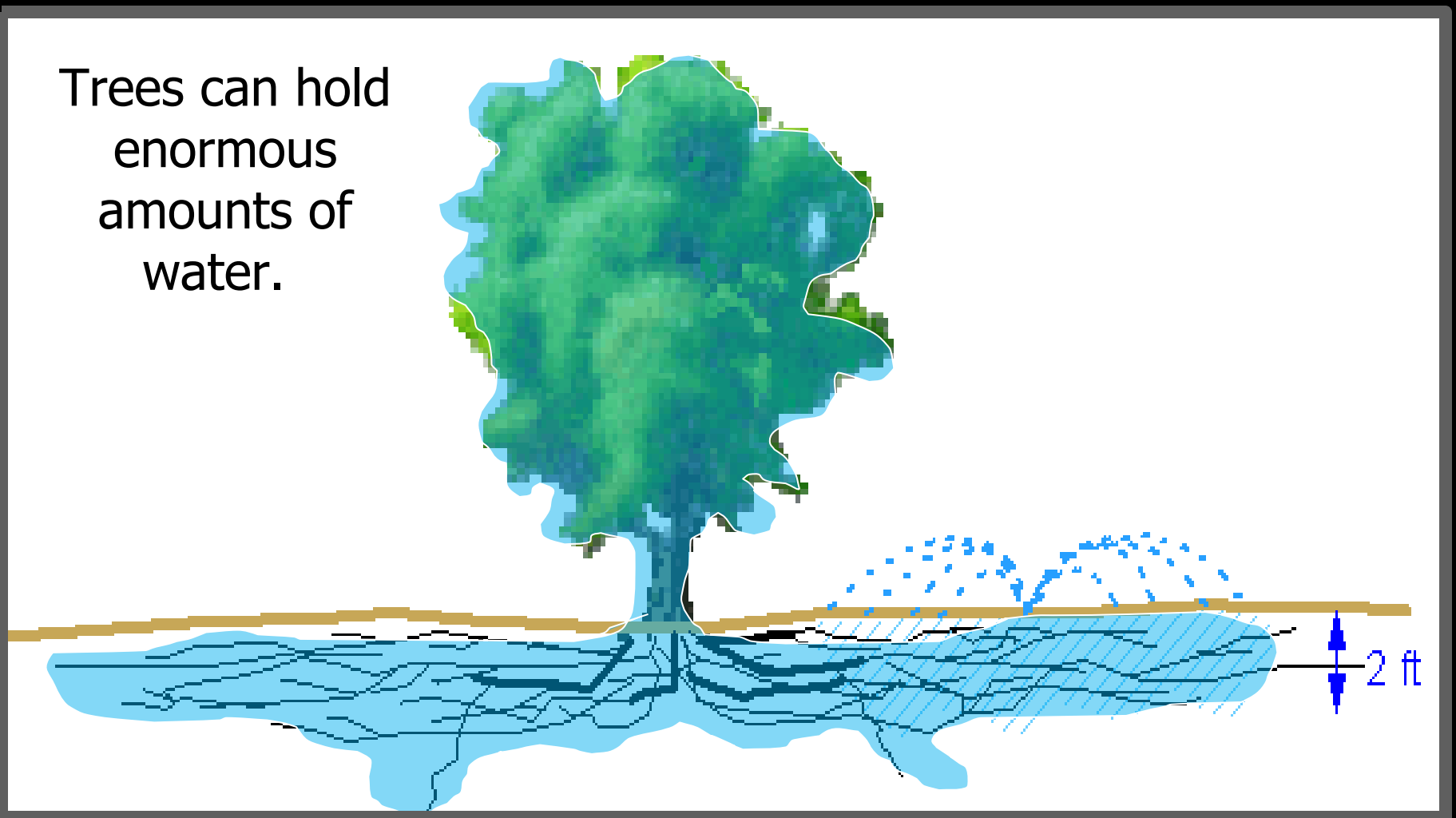

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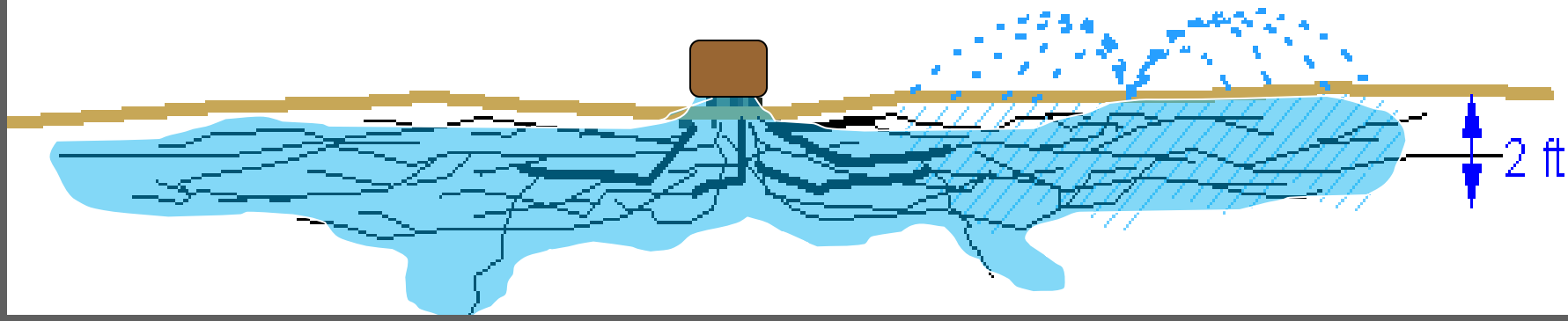
Trees can hold enormous amounts of water.



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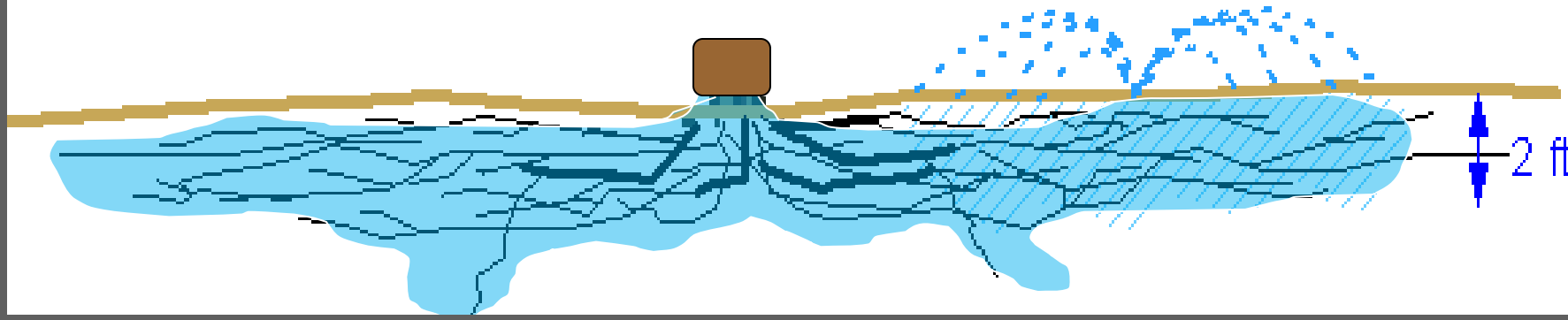

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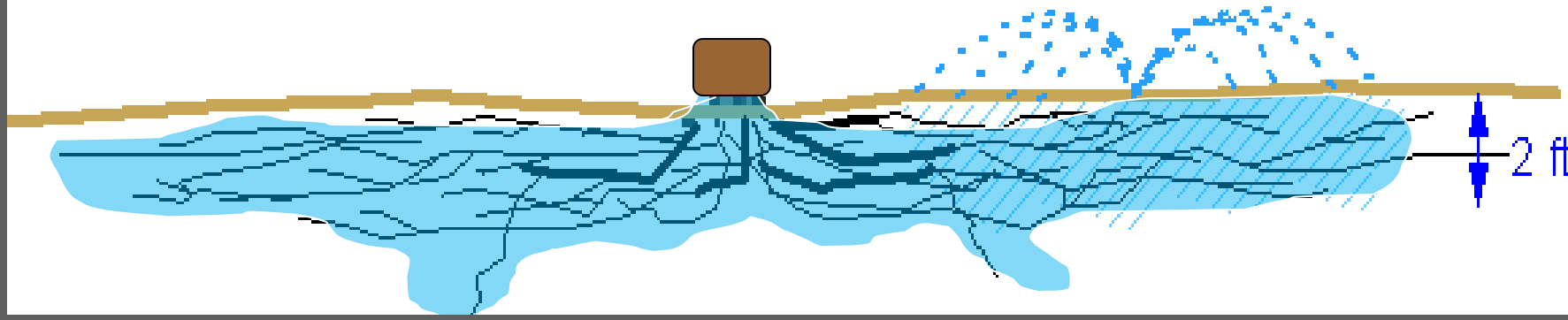
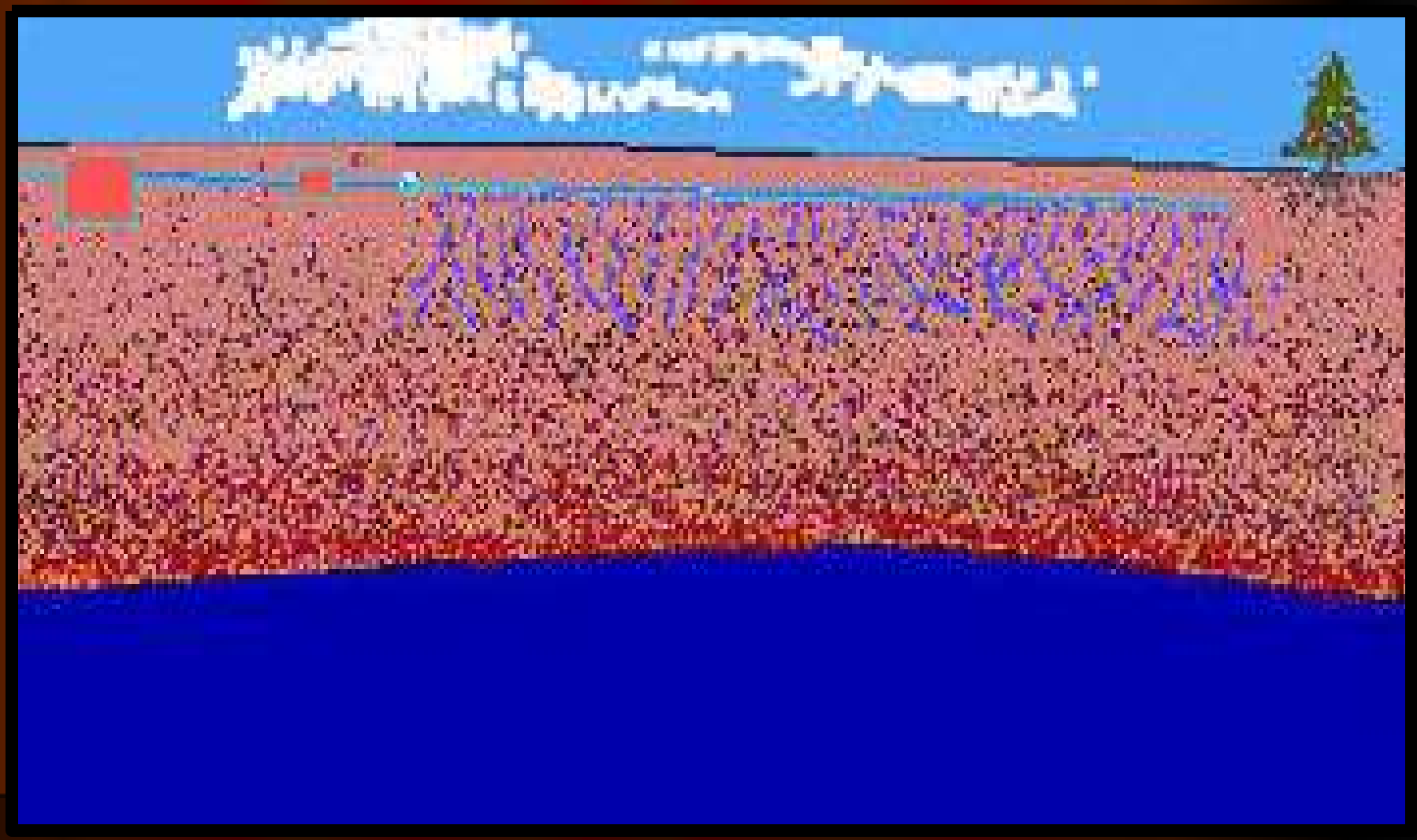
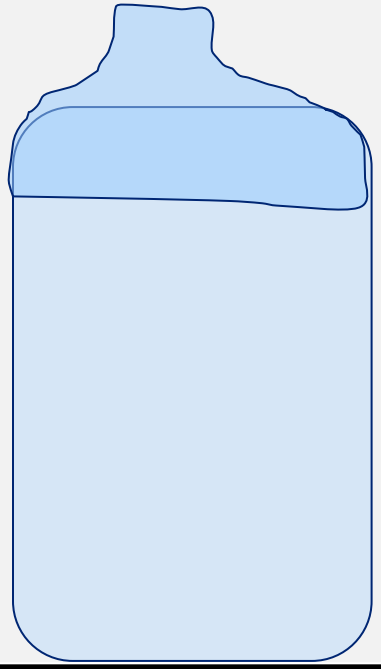
Trees help control flooding by holding water in their tissues.



- Percolation: The slow movement of water through the soil. Cleans and purifies.

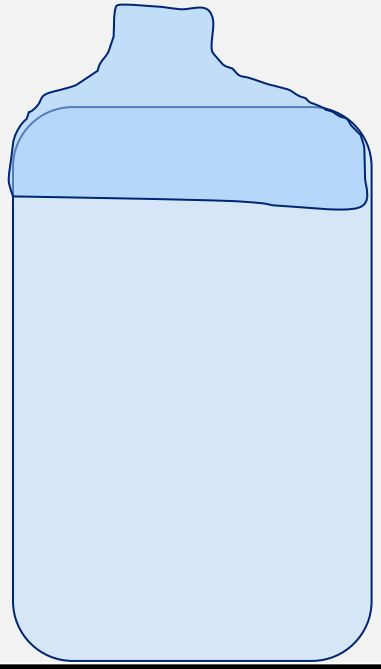


Filtering Water Activity / Infiltration



Filtering Water Activity / Infiltration

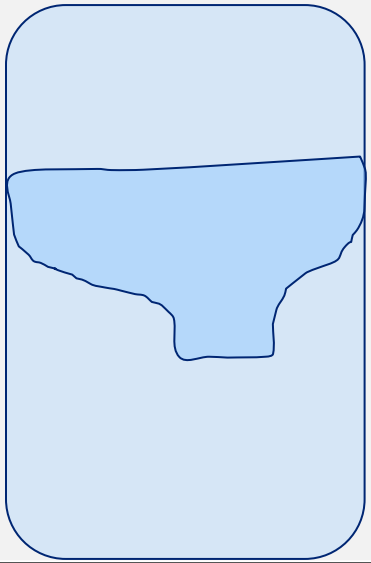
Soda bottle cut by teacher or parent,



[redacted]

Filtering Water Activity / Infiltration

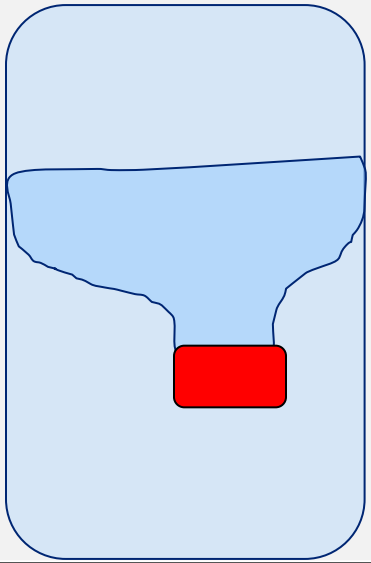
Soda bottle cut by teacher or parent, invert the top like so.

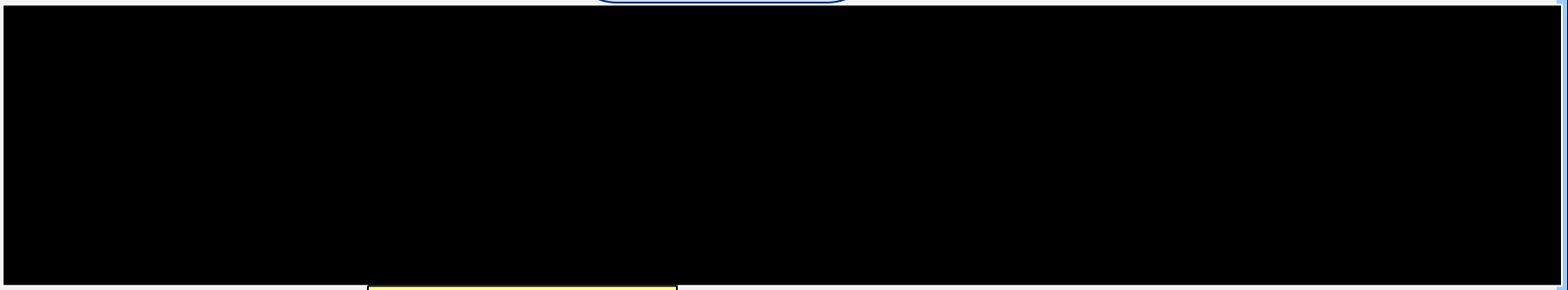


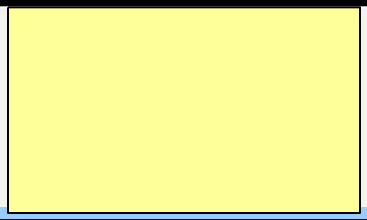
Filtering Water Activity / Infiltration

Soda bottle cut by teacher or parent, invert the top like so.

Add cap







Filtering Water Activity / Infiltration

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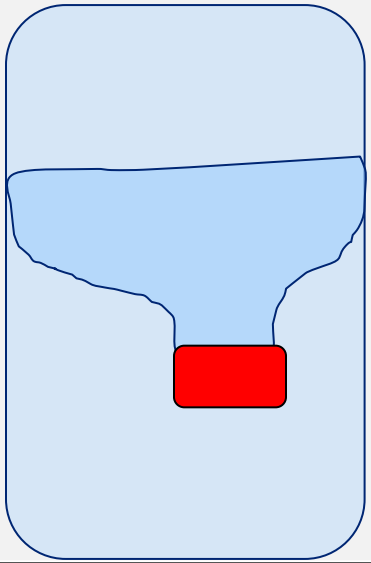
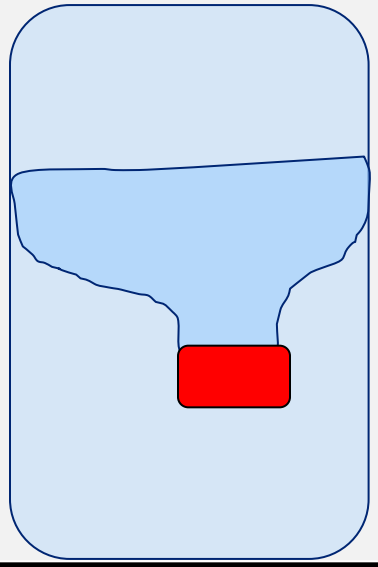


Teacher is going to create nasty water with coffee grounds, garlic powder, and vegetable oil, and salt.

Filtering Water Activity / Infiltration

Soda bottle cut by teacher or parent,
invert the top like so.
Add cap
Your group must brainstorm methods to filter water, bring in the materials as a group and assemble tomorrow.



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[redacted]

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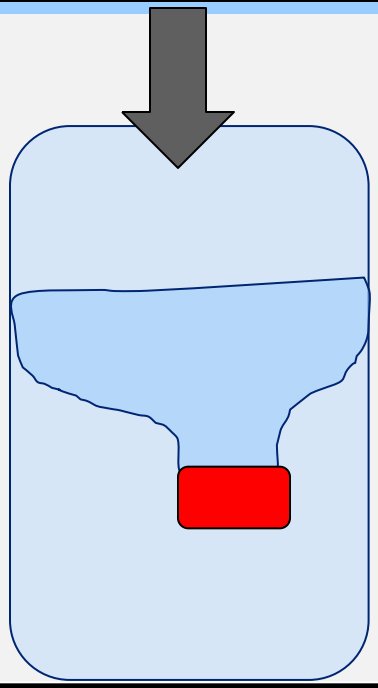

Teacher is going to create nasty water with coffee grounds, garlic powder, and vegetable oil, and salt.
Teacher will add dirty water to the top.

[redacted]

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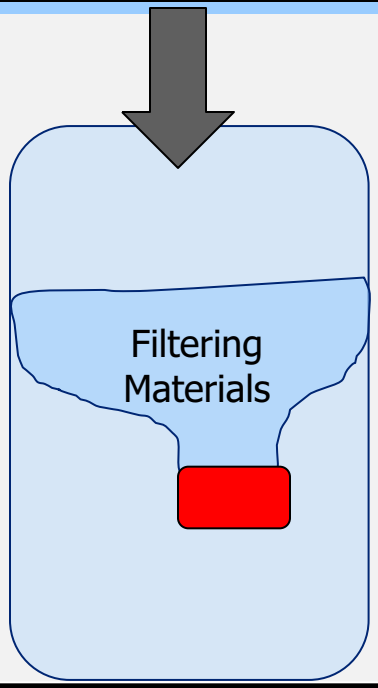

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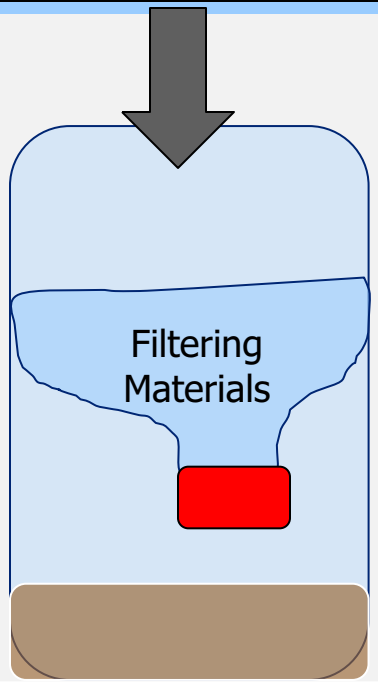
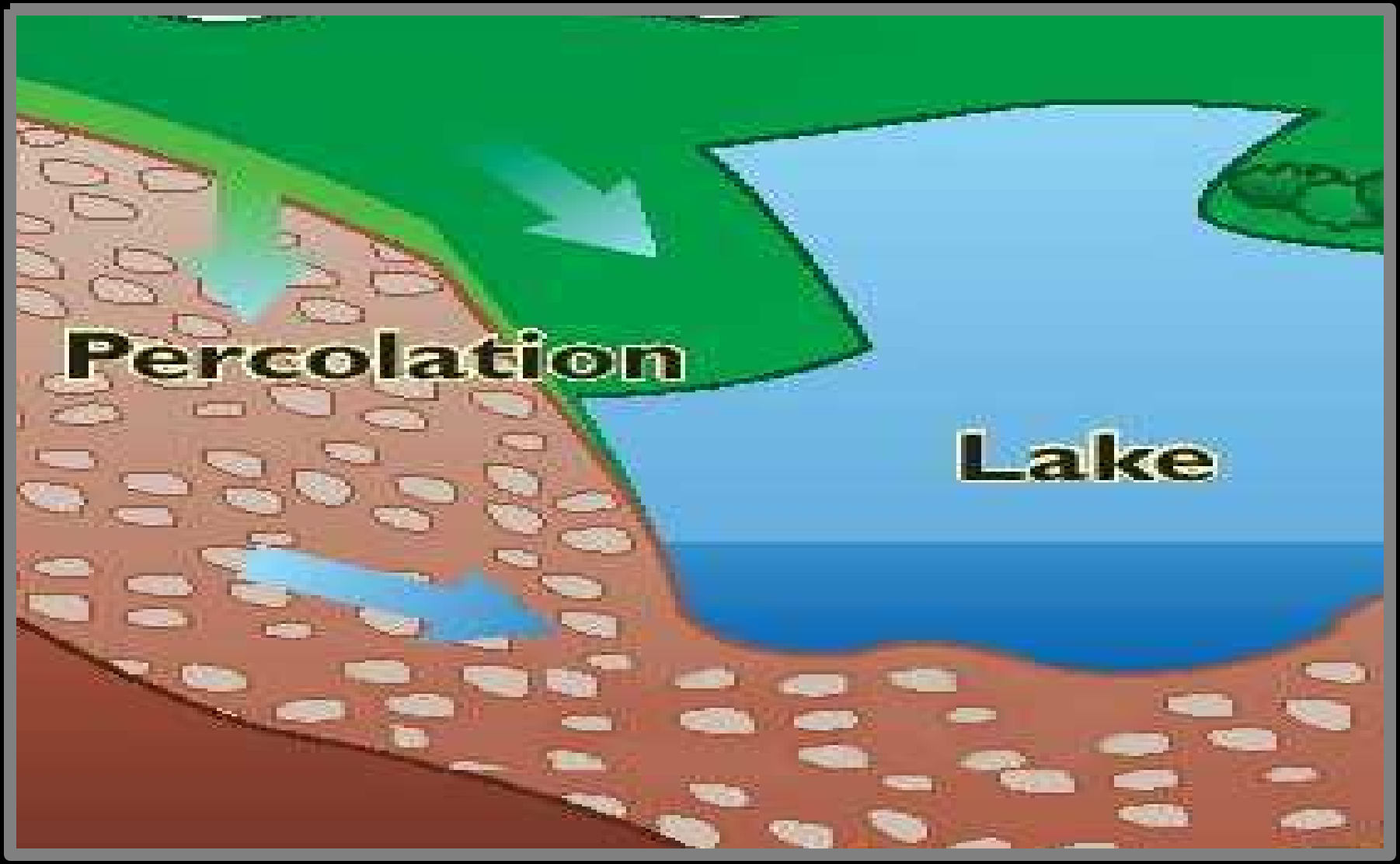


Teacher is going to create nasty water with coffee grounds, garlic powder, and vegetable oil, and salt.
Teacher will add dirty water to the top.

How clear can your group get the water?

- Answer: Percolation trapped the larger particles as the water moves through the soil.



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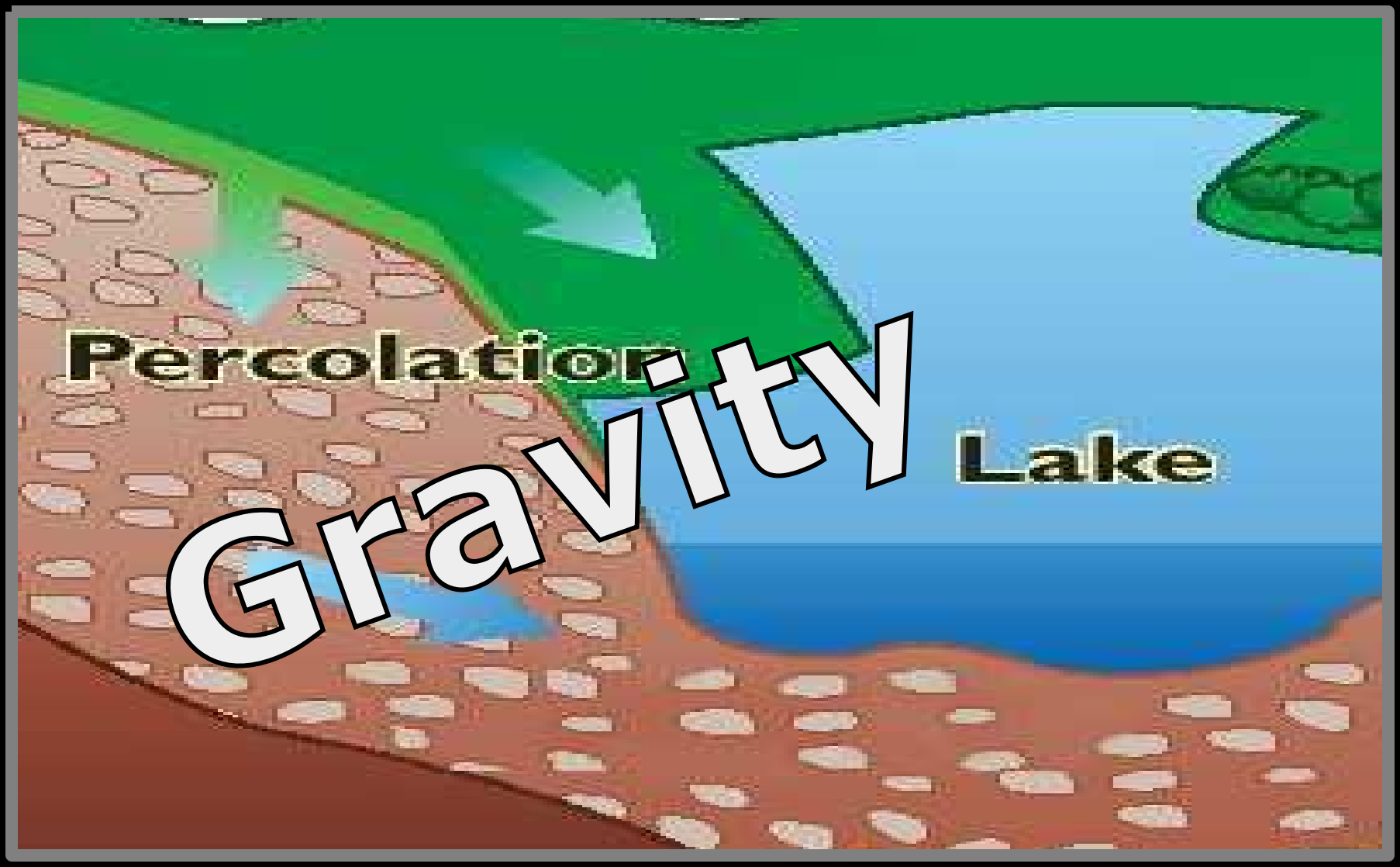
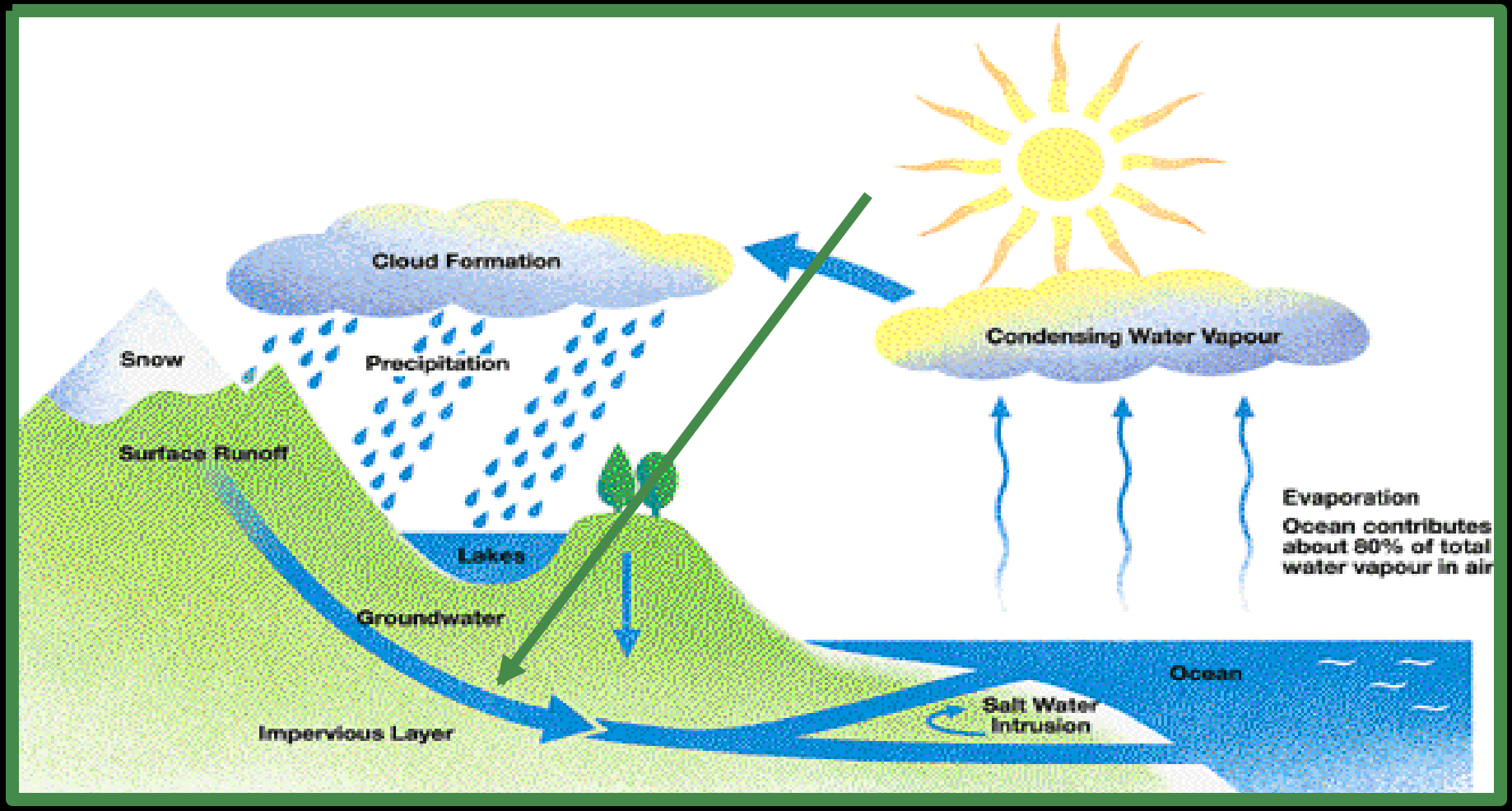
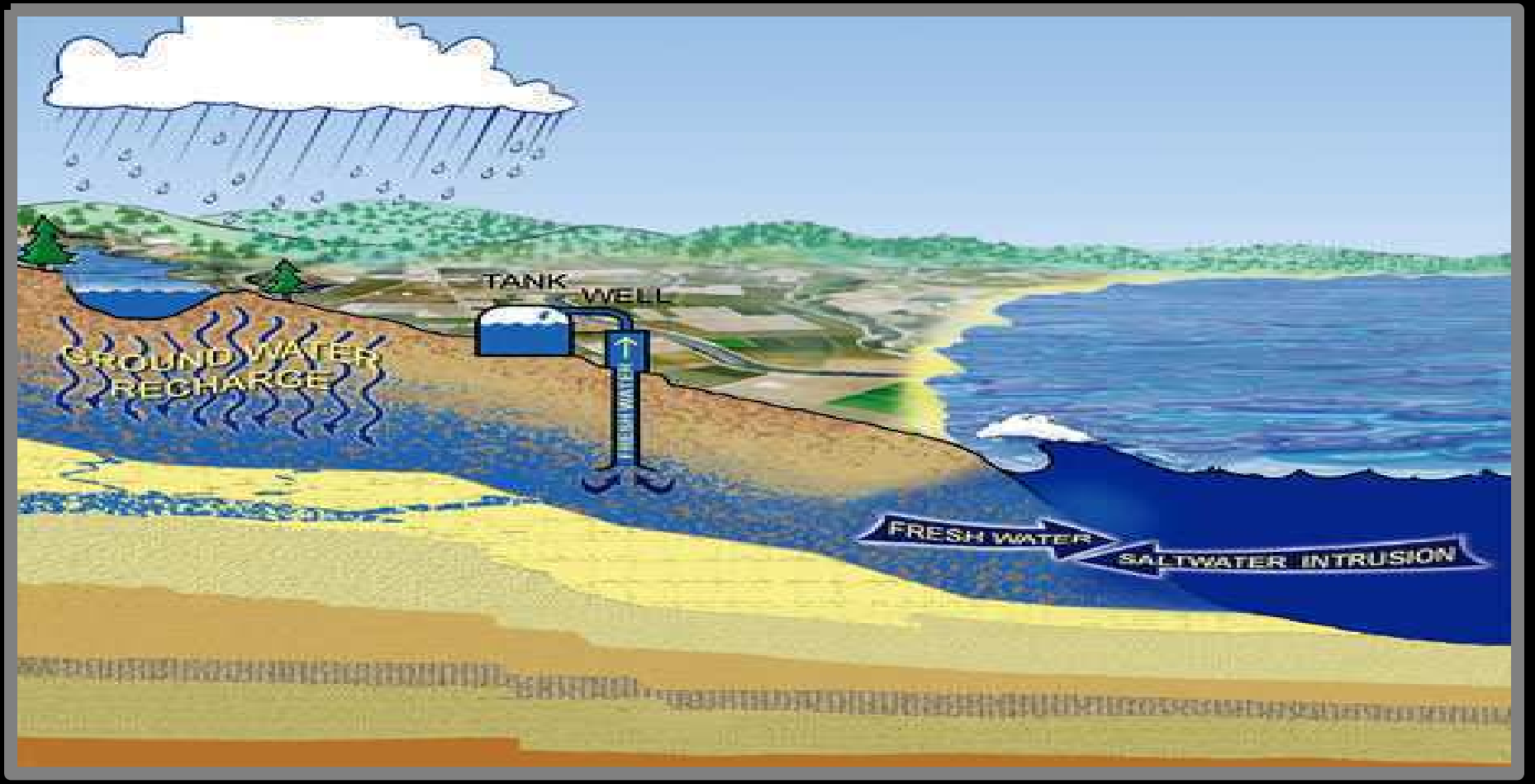



Spring

- Groundwater discharge: Water that has been underground seeps back into the oceans, or into rivers or lakes.



- Groundwater is a very important source of clean water.
  - It can be obtained by digging a well, or when it comes to the surface as a spring.



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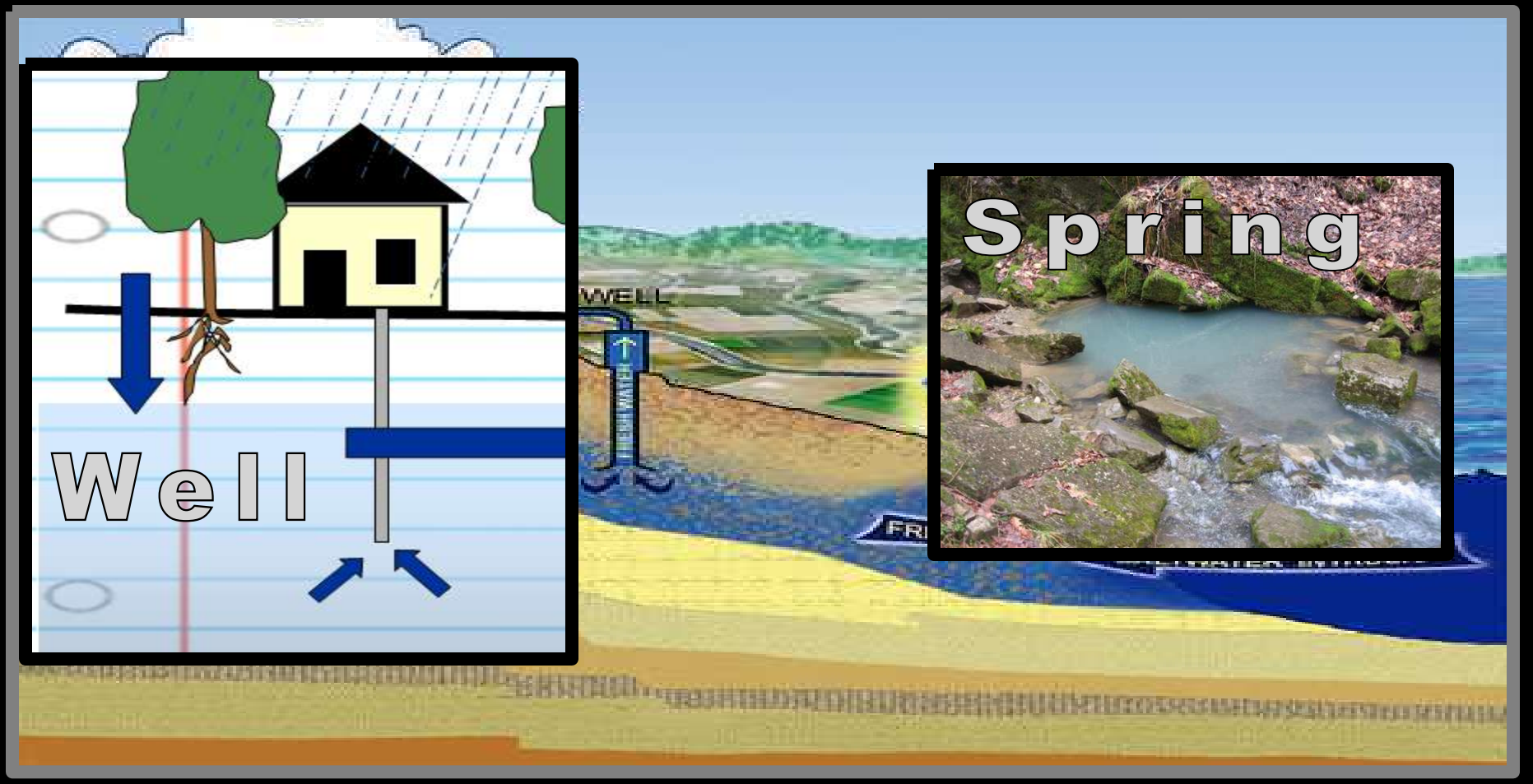


- Water can be stored in…
  - _
  - _
  - _
  - _
  - _
  - _

- Water can be stored in…
  - Oceans
  -
  -
  -
  -
  -

- Water can be stored in…
  - Oceans
  - Ice / snow
  -
  -
  -
  -

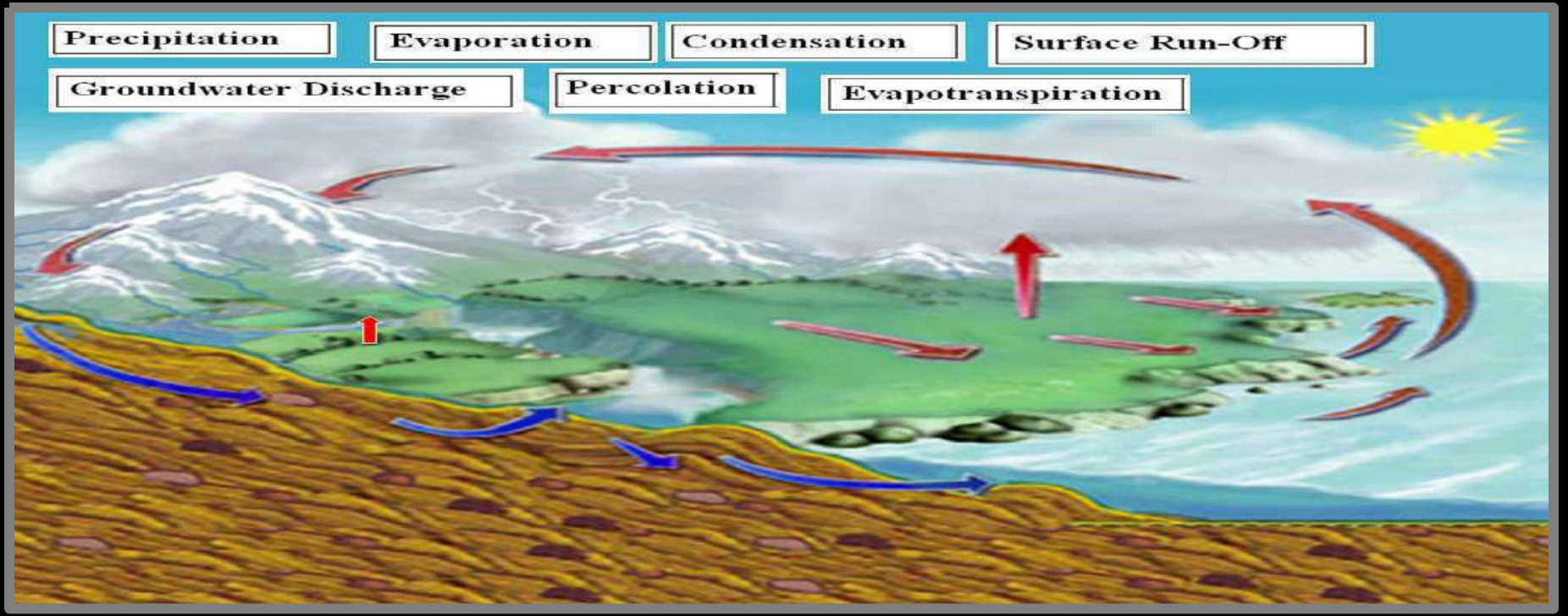
- Water can be stored in…
  - Oceans
  - Ice / snow
  - Surface water
  -
  -
  -

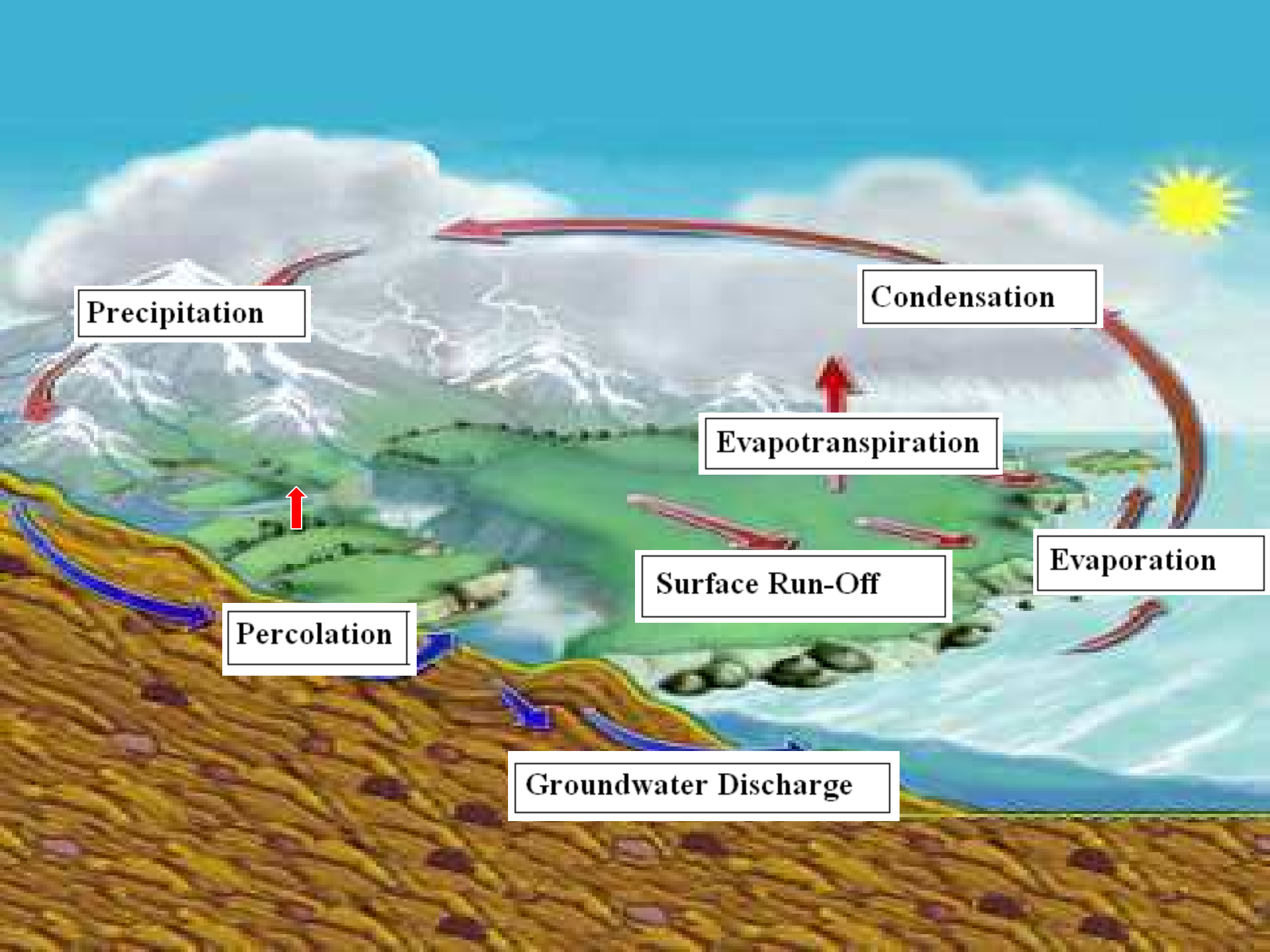
- Water can be stored in…
  - Oceans
  - Ice / snow
  - Surface water
  - Groundwater
  -
  -

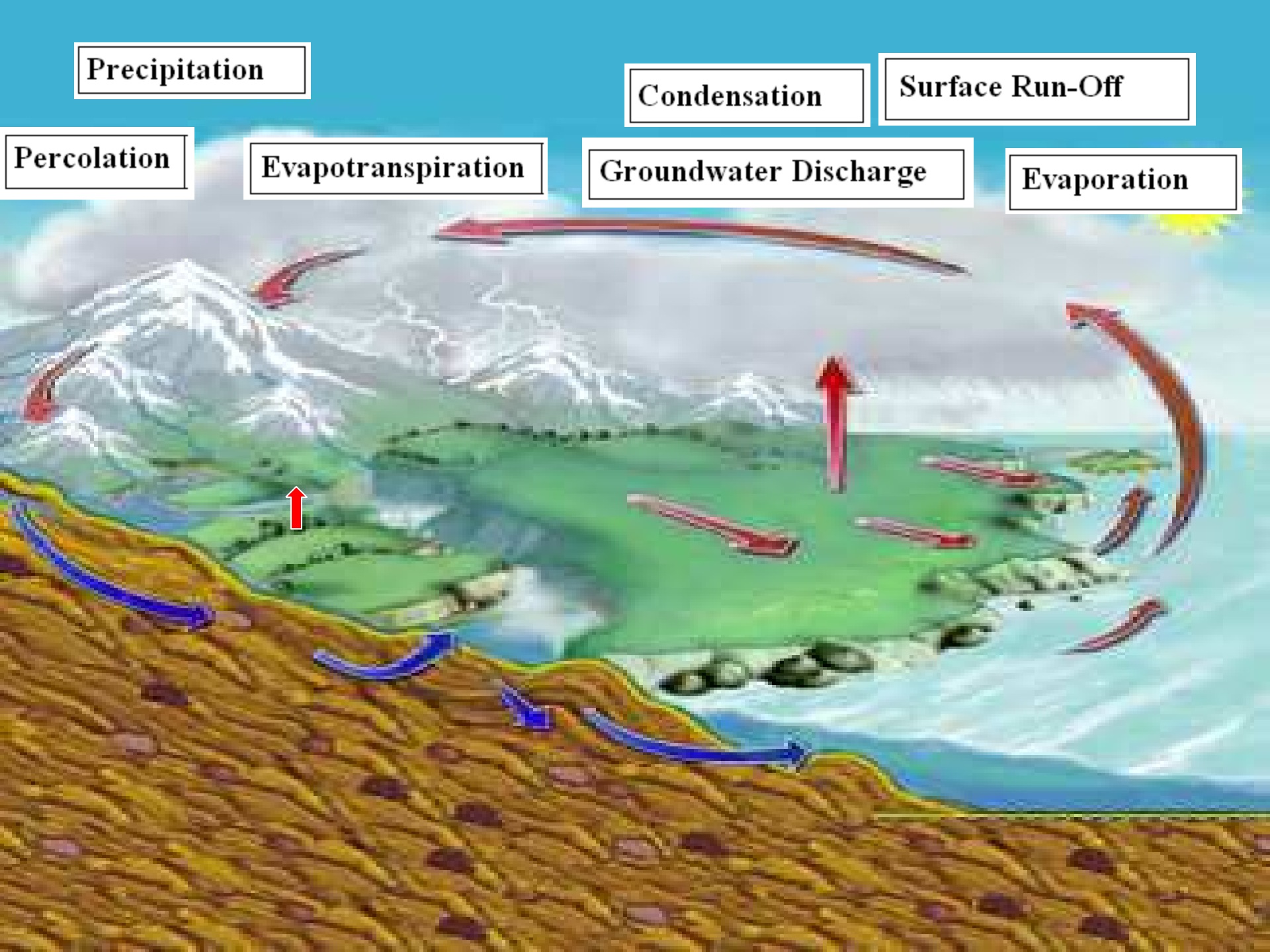
- Water can be stored in…
  - Oceans
  - Ice / snow
  - Surface water
  - Groundwater
  - Soil and Organisms
  -

- Water can be stored in…
  - Oceans
  - Ice / snow
  - Surface water
  - Groundwater
  - Soil and Organisms
  - Atmosphere

- Activity! Not Smart Board.
  - Teacher on next slide to minimize out of slideshow.
  - Students should drag the terms to the correct position on the picture.
  - Answer revealed after.




Precipitation
Condensation
Evapotranspiration
Evaporation
Surface Run-Off
Percolation
Groundwater Discharge


Precipitation
Condensation
Surface Run-Off
Percolation
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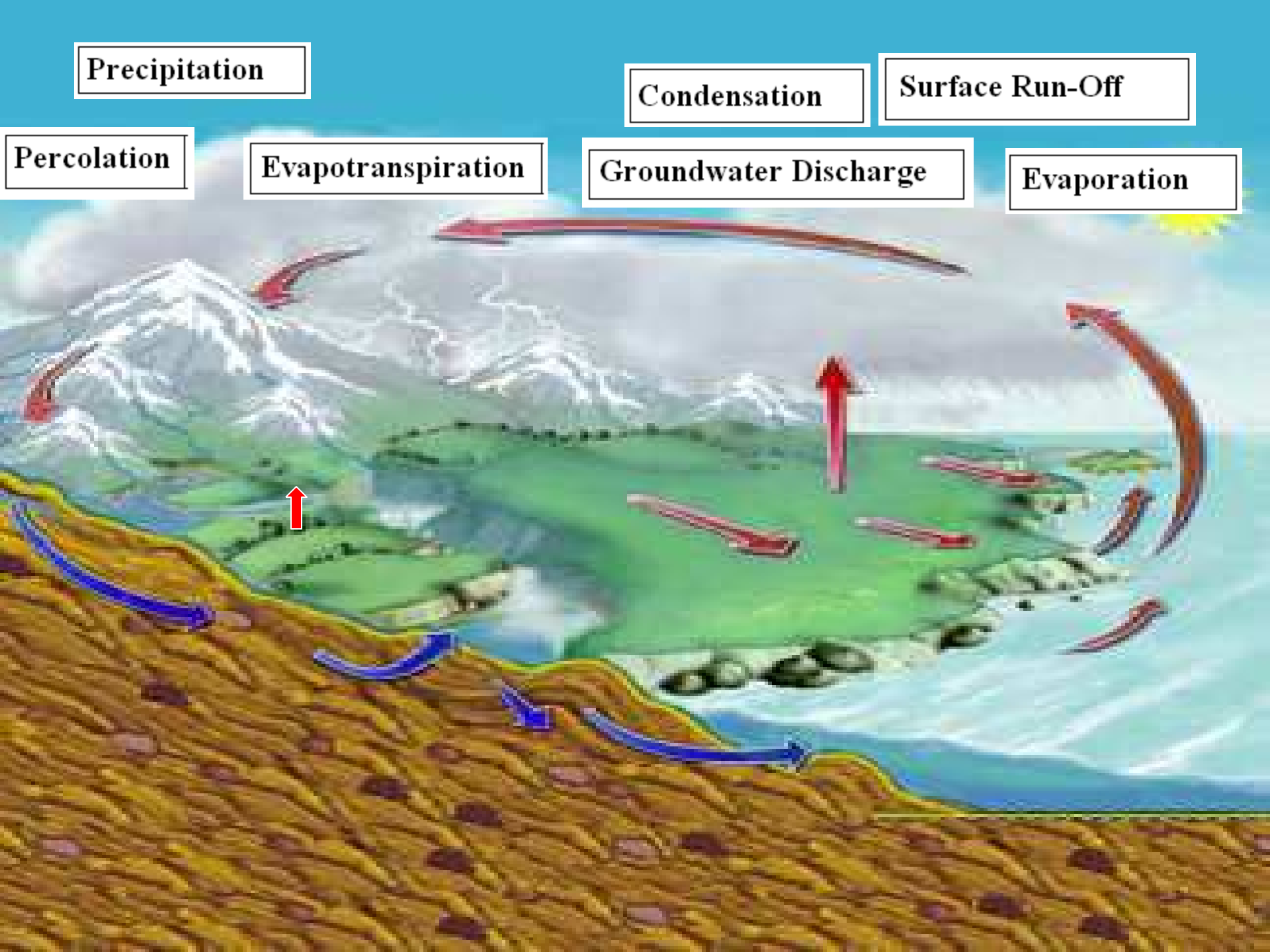
Groundwater Discharge
Evaporation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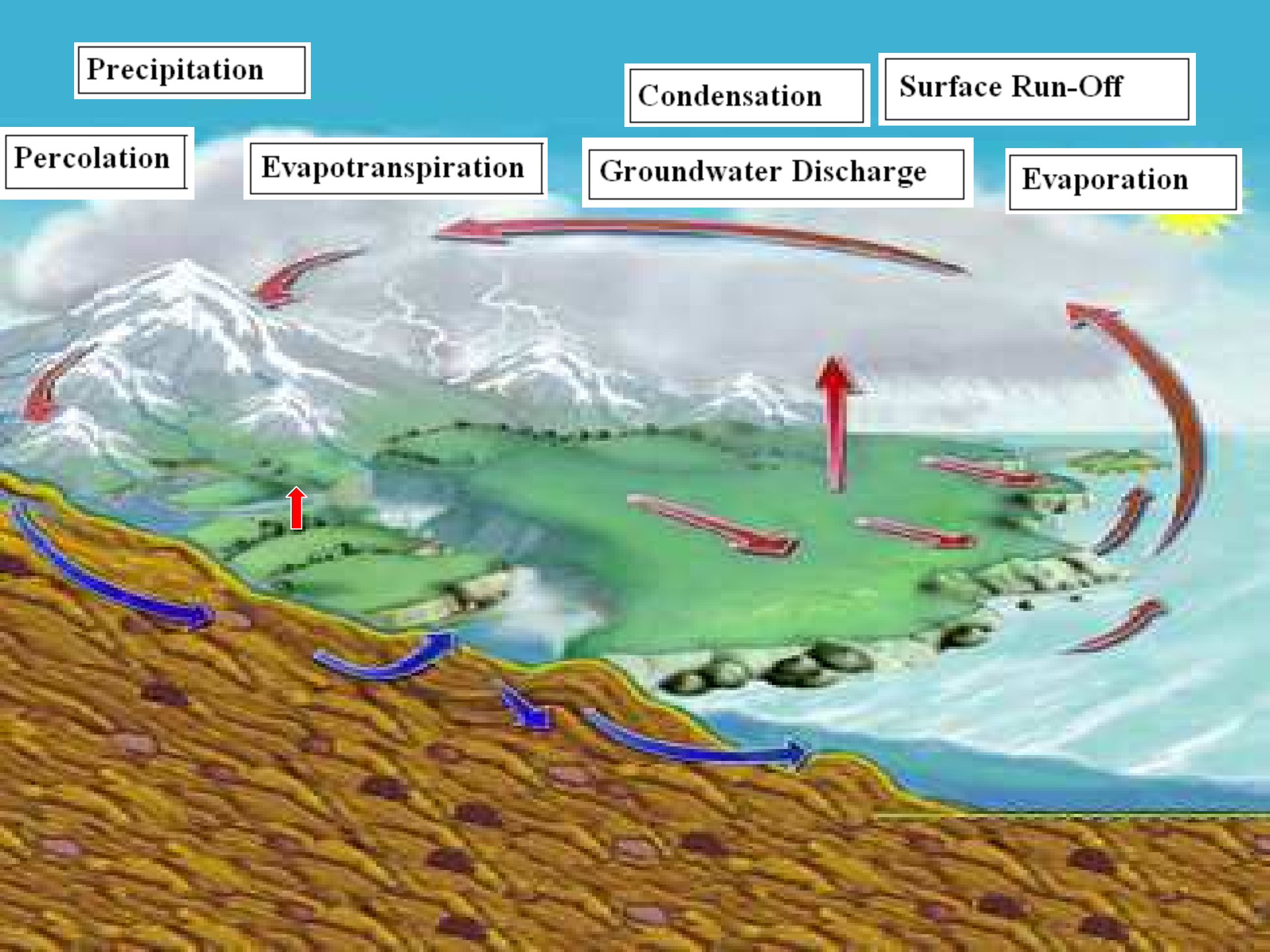
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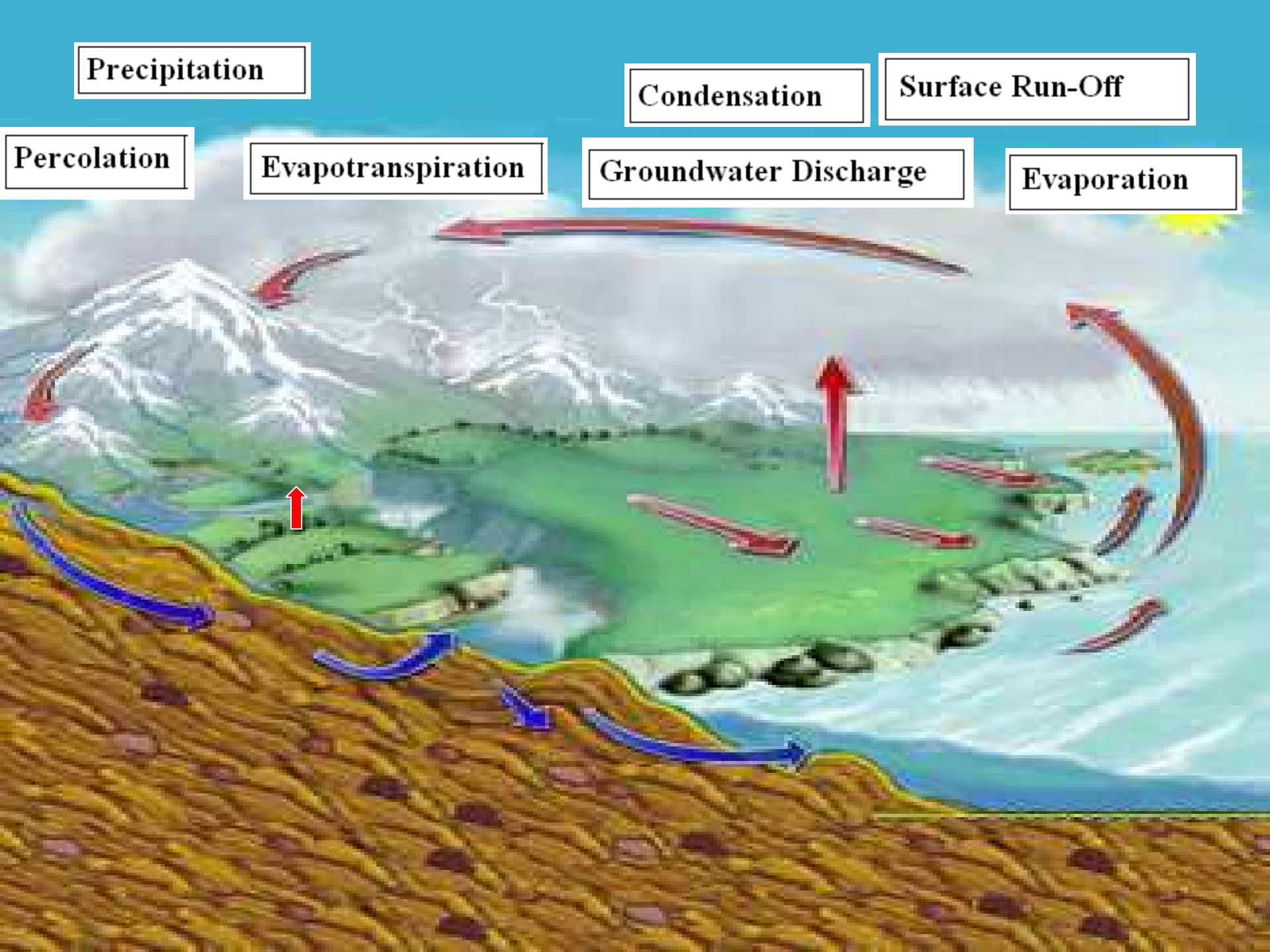
Precipitation
Condensation
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Percolation
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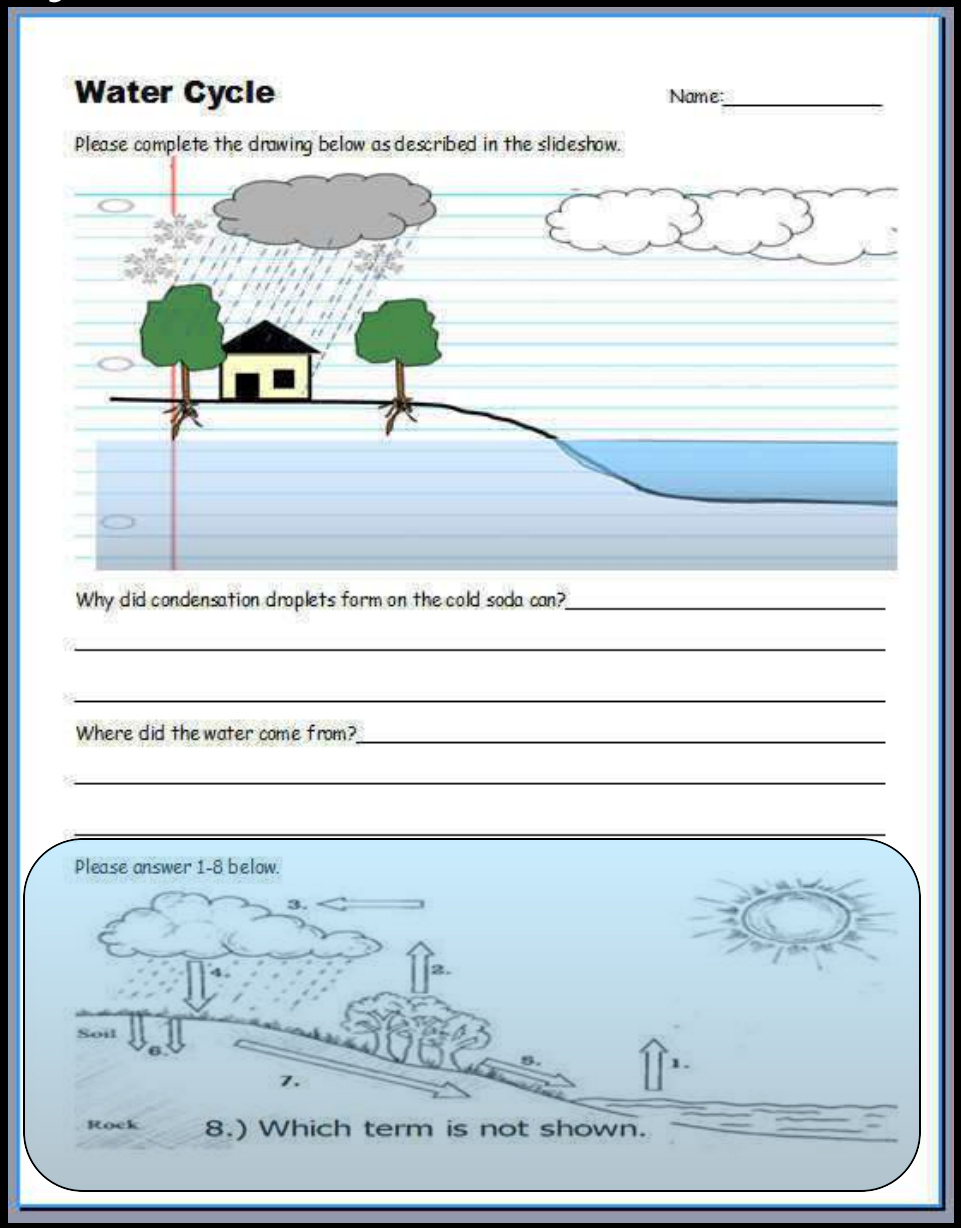
Groundwater Discharge
Evaporation

Possible Answer

- Video Song! (Optional) The Water Cycle.
  - Very strange but extremely catchy.
  - Teacher should preview prior as it contains some strange parts.
  - http://www.youtube.com/watch?v=Zejk_iNFfPA

- Water Cycle Available Sheet



Water Cycle

Name:_____

Please complete the drawing below as described in the slideshow.

Why did condensation droplets form on the cold soda can?_____

_____

_____

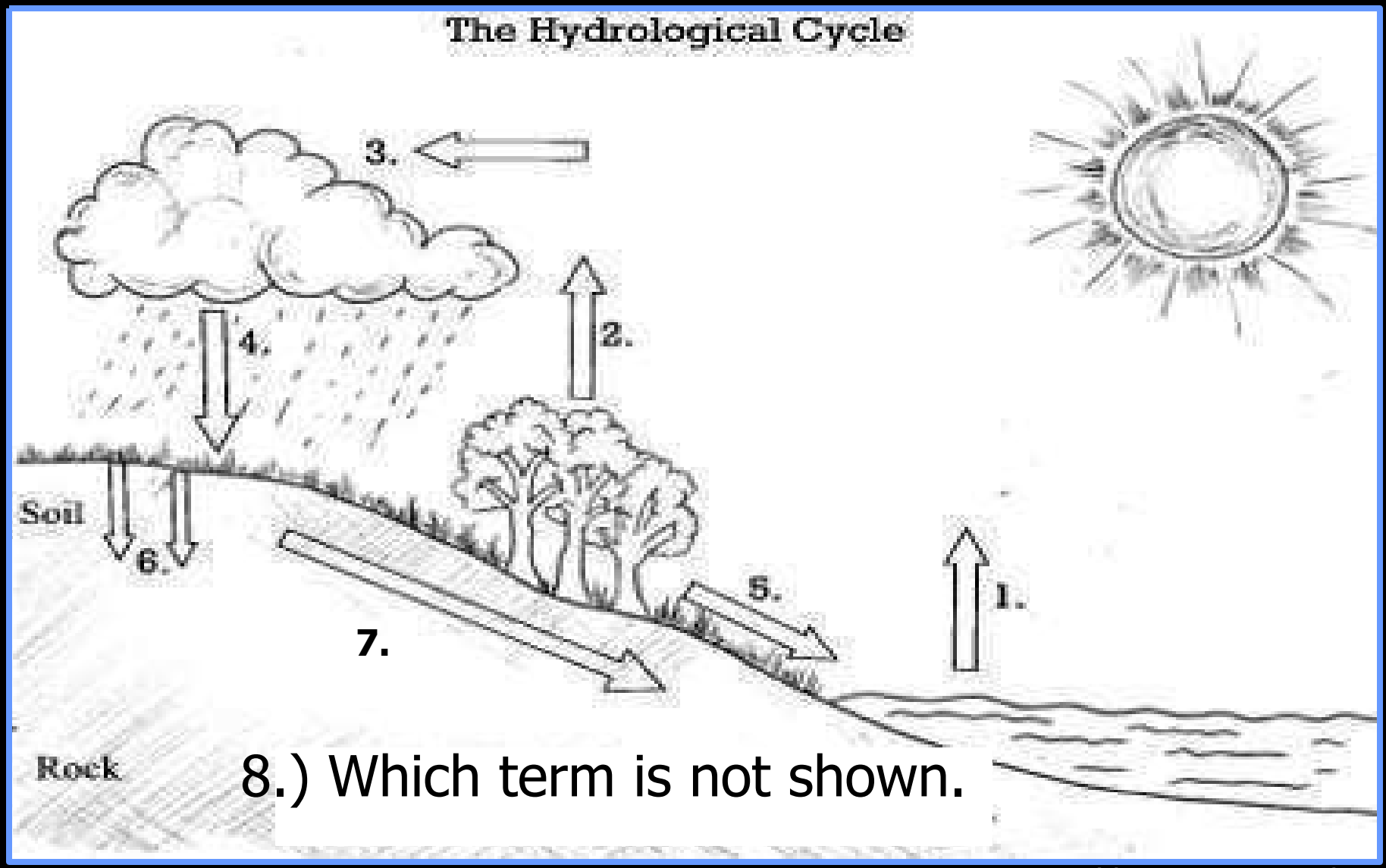
Where did the water come from?_____

_____

_____

Please answer 1-8 below.

8.) Which term is not shown.



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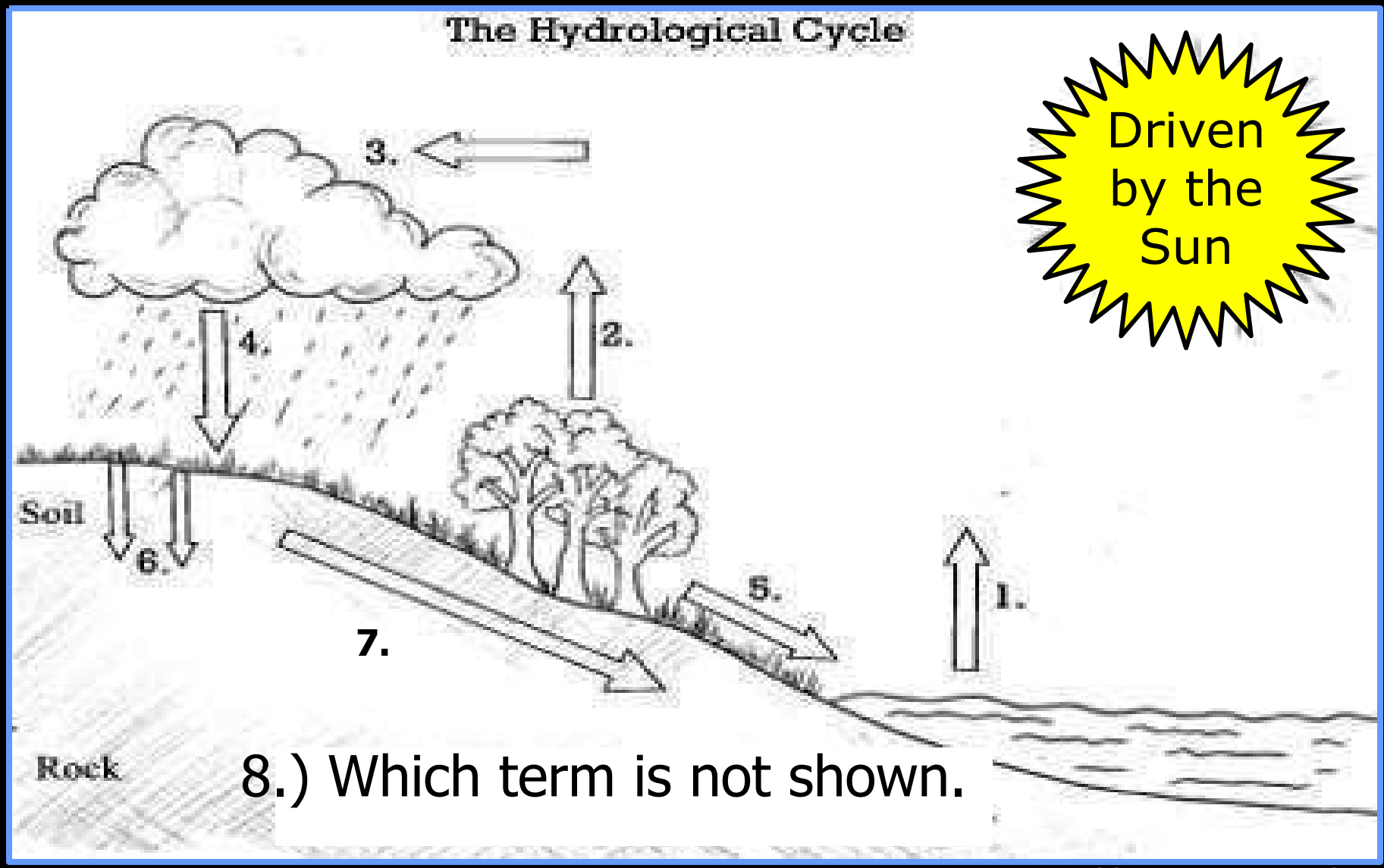
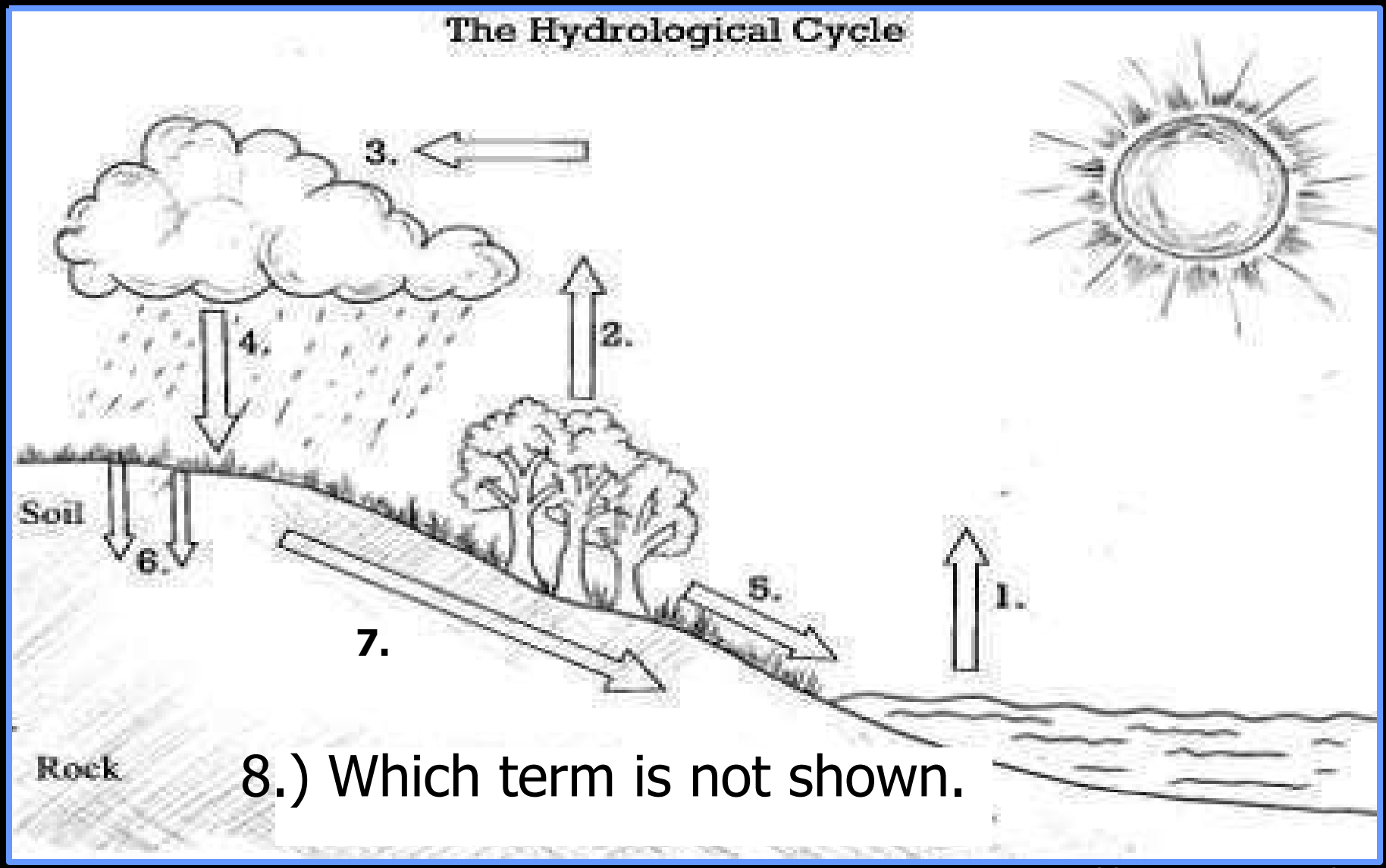


8.) Which term is not shown.

- Quiz 1-7 The hydrologic cycle. Please record the numbers and the correct term.



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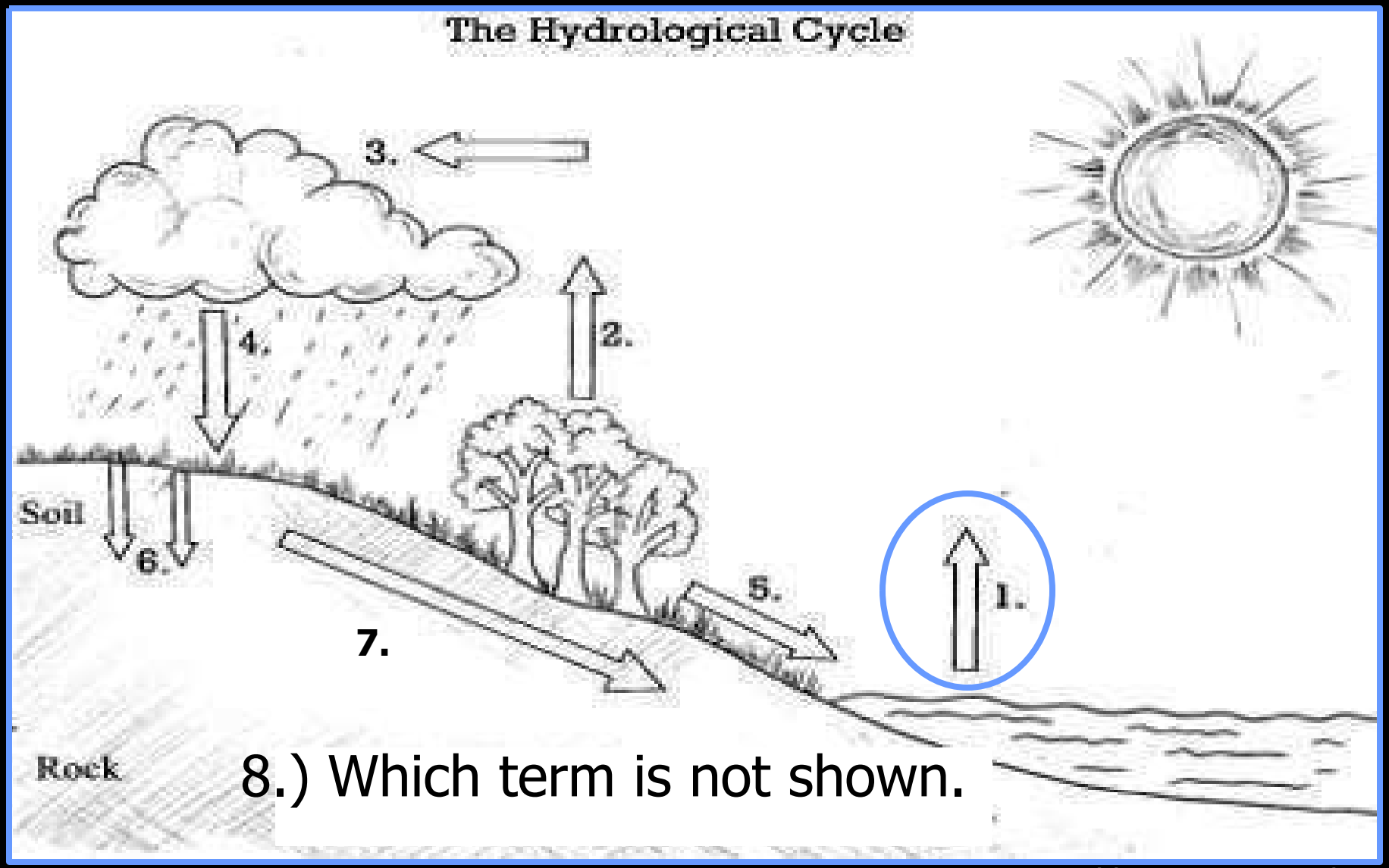
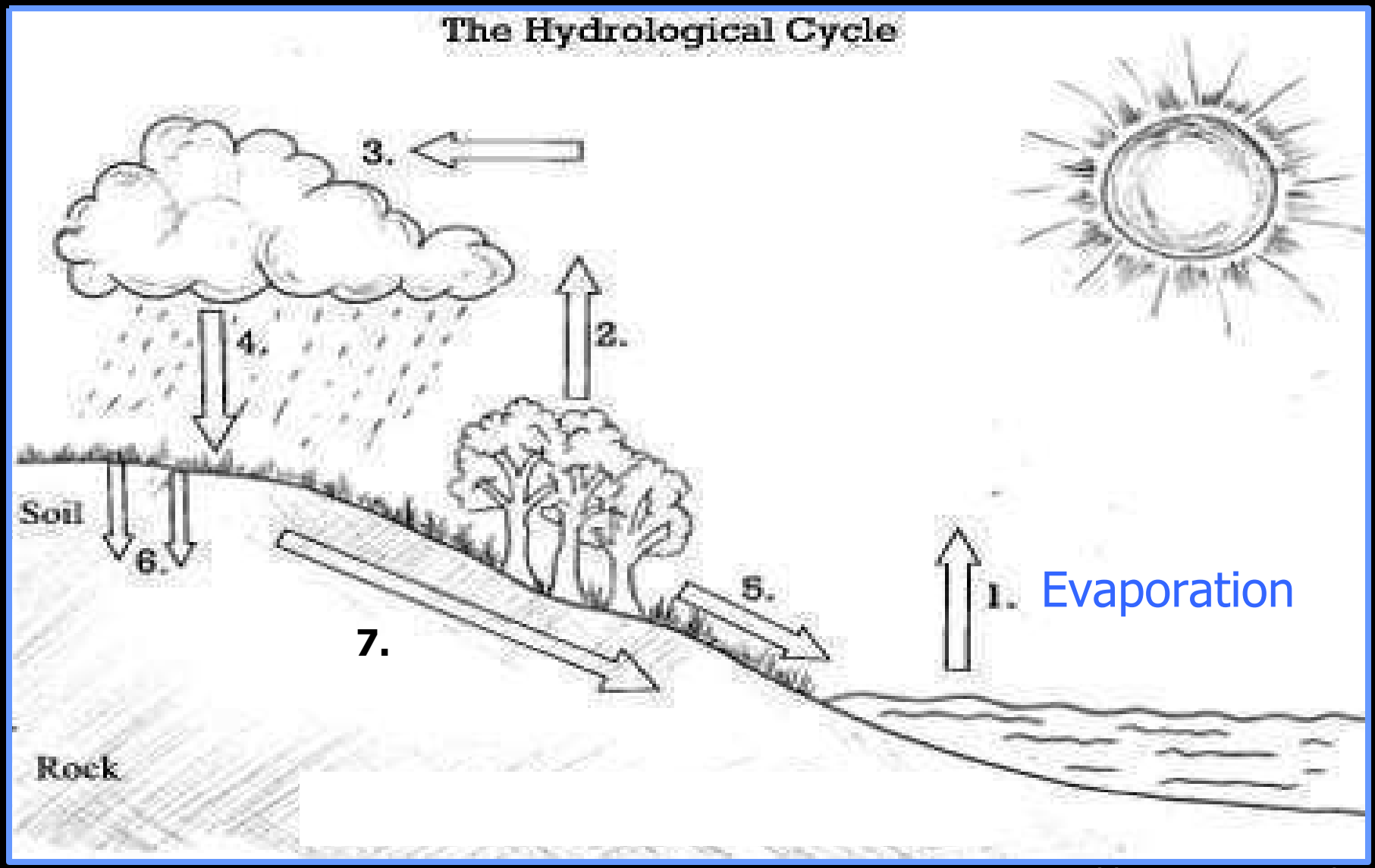


8.) Which term is not shown.

- Answers1-8 The hydrologic cycle.



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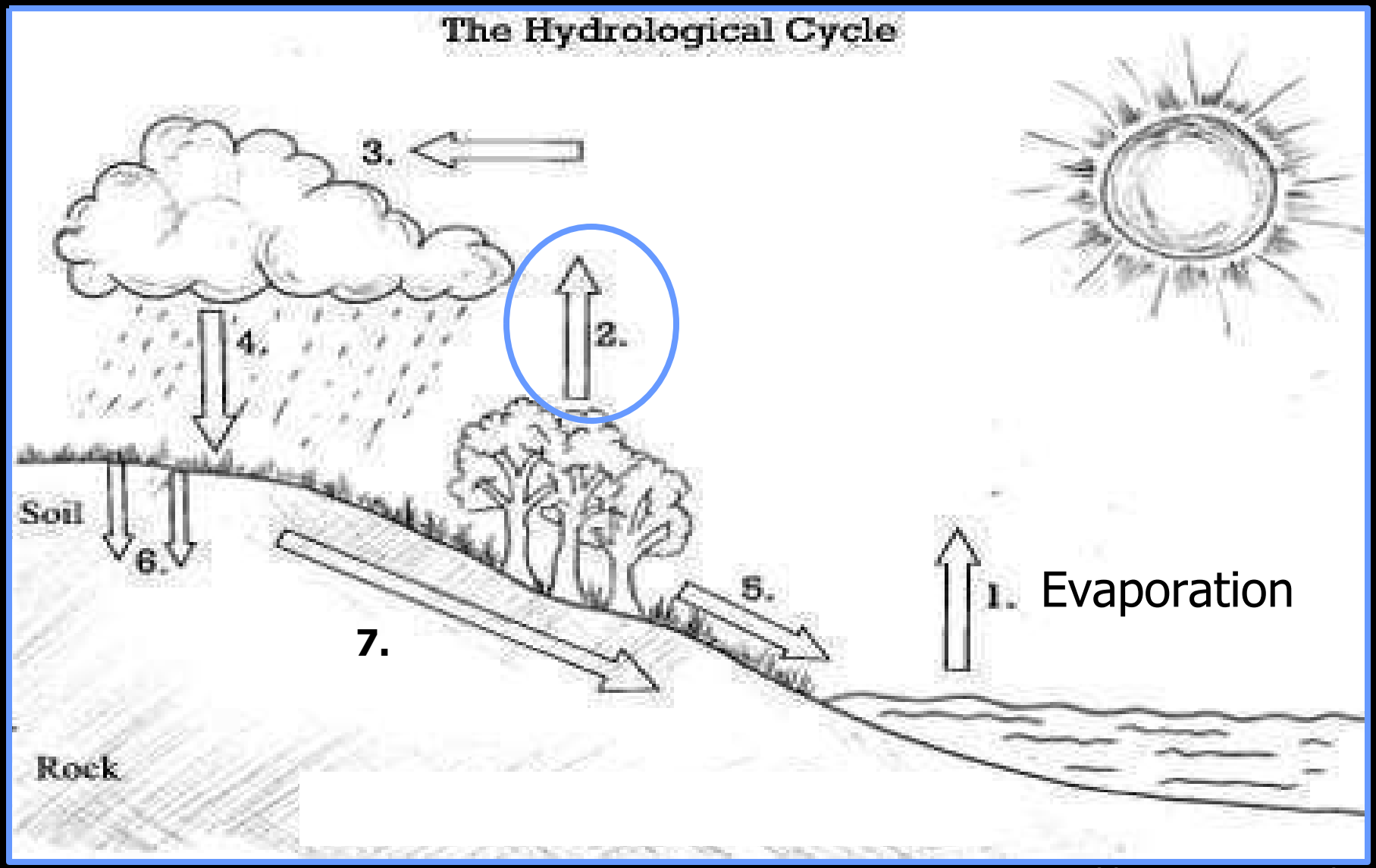

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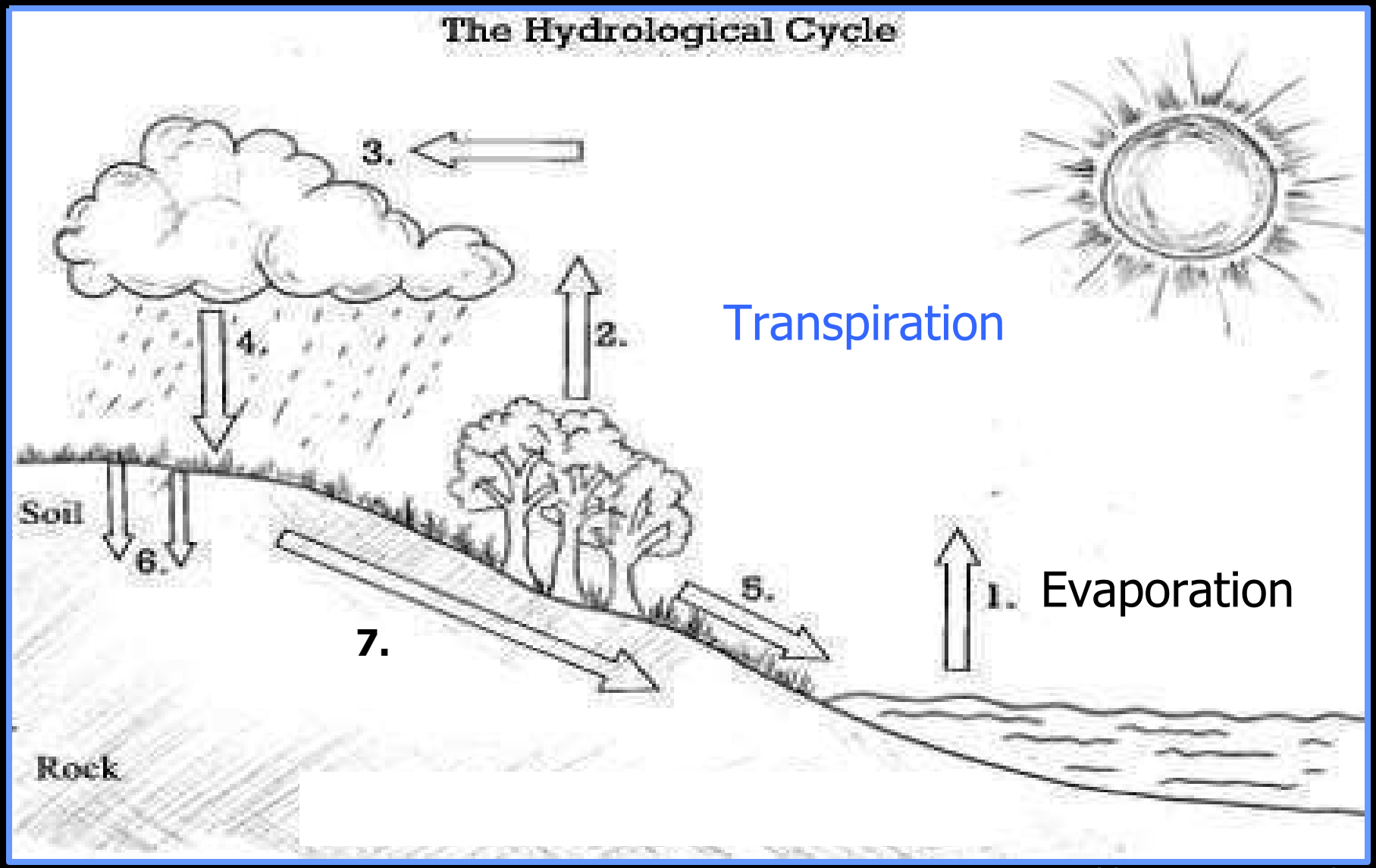

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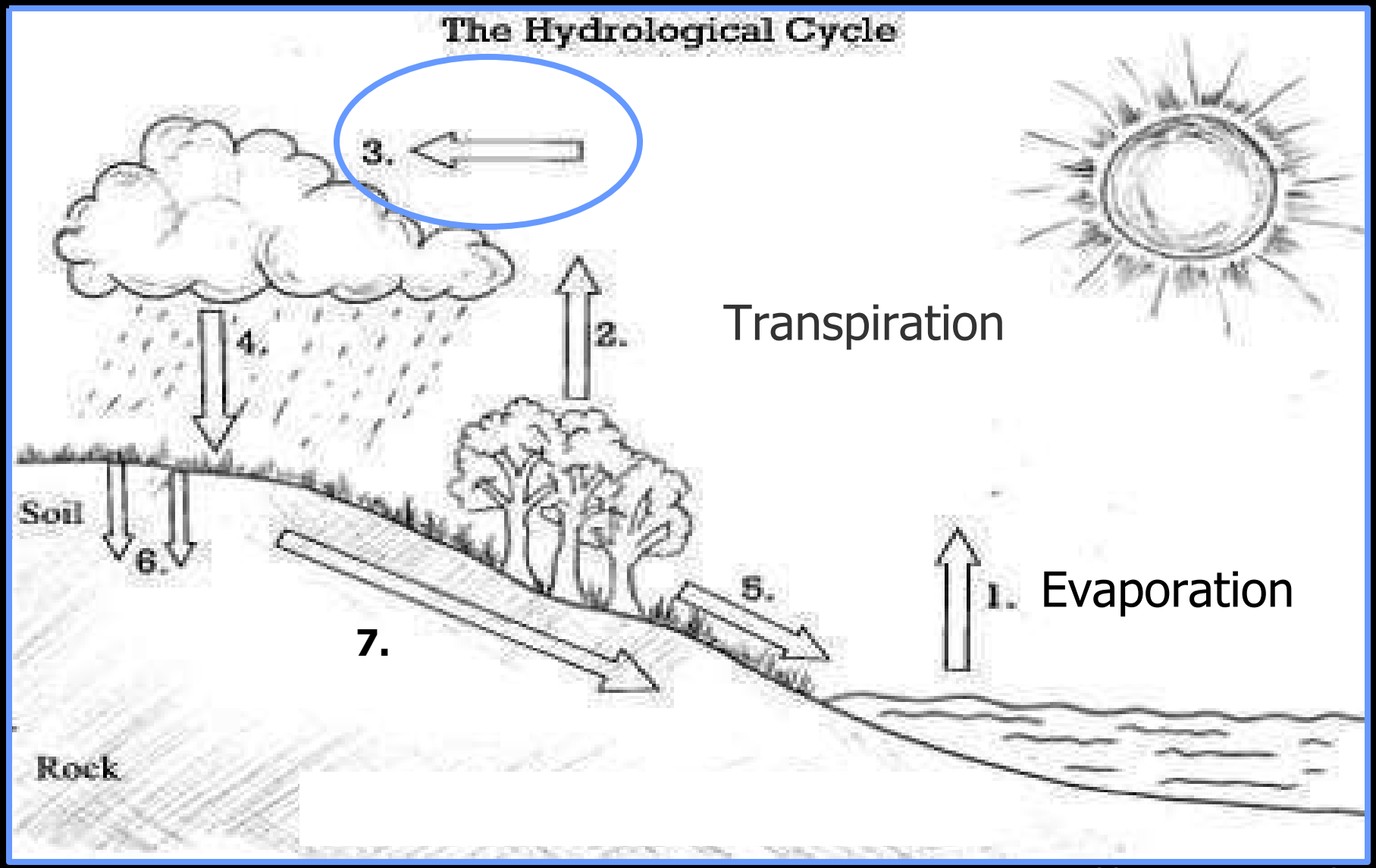

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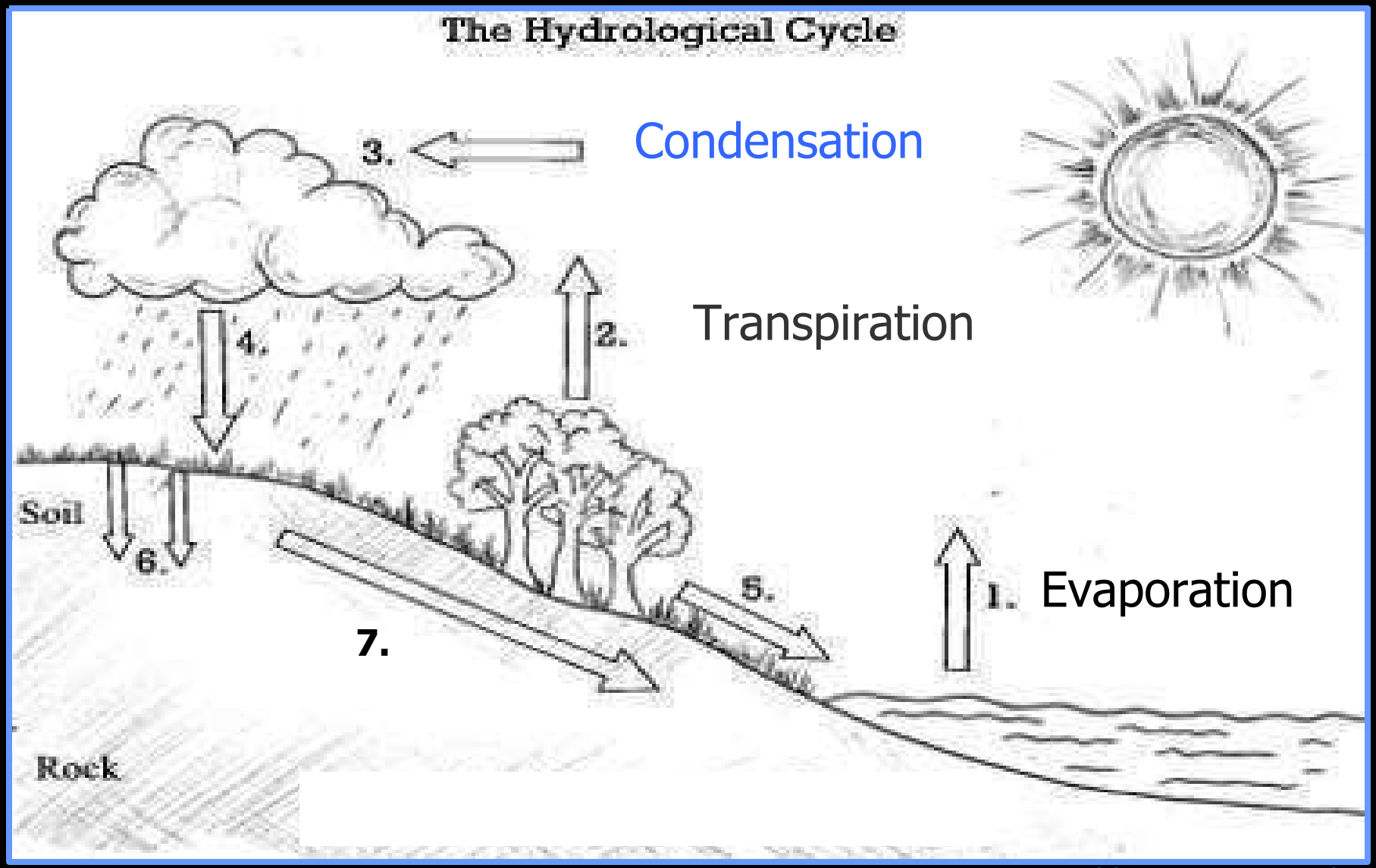

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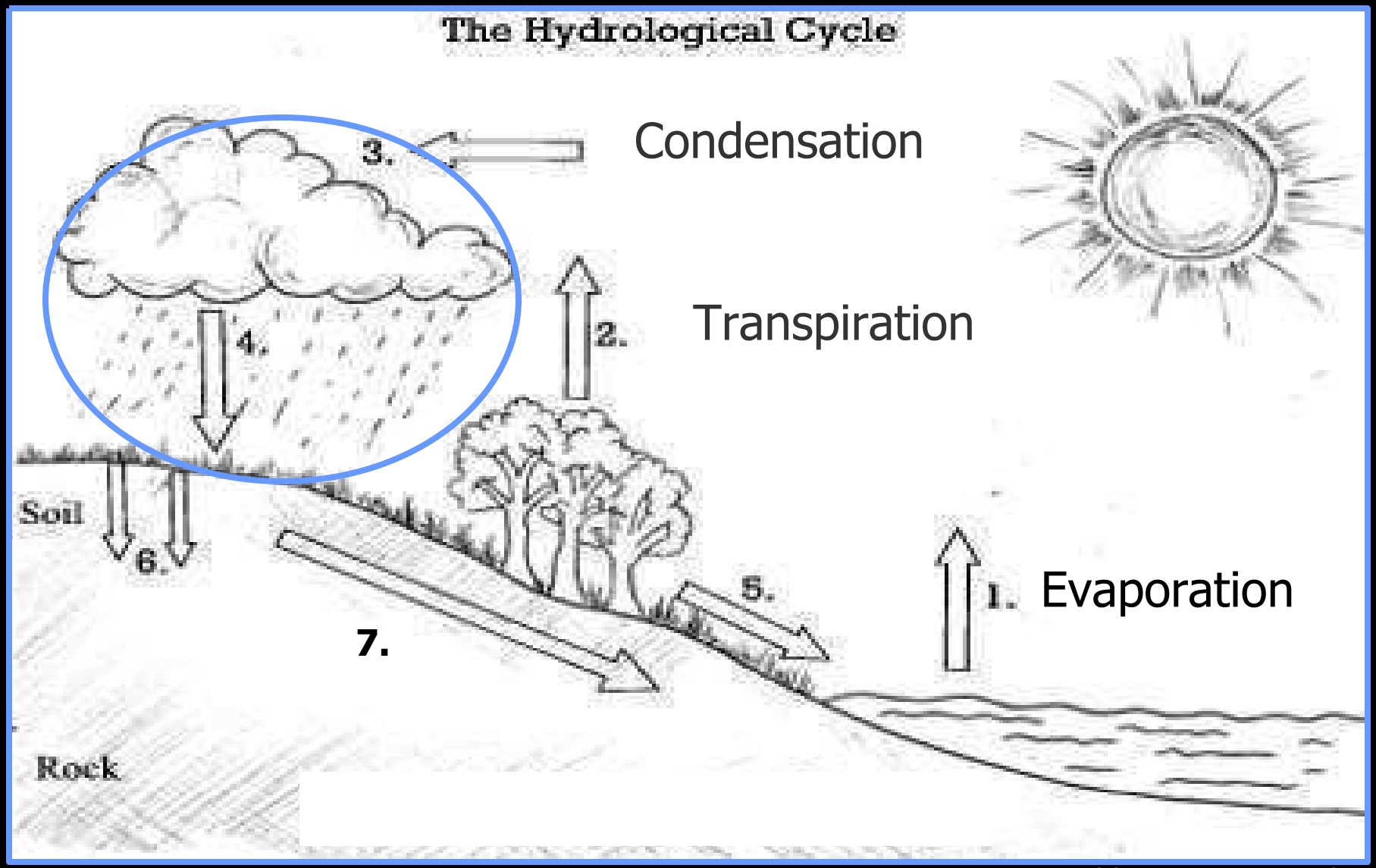

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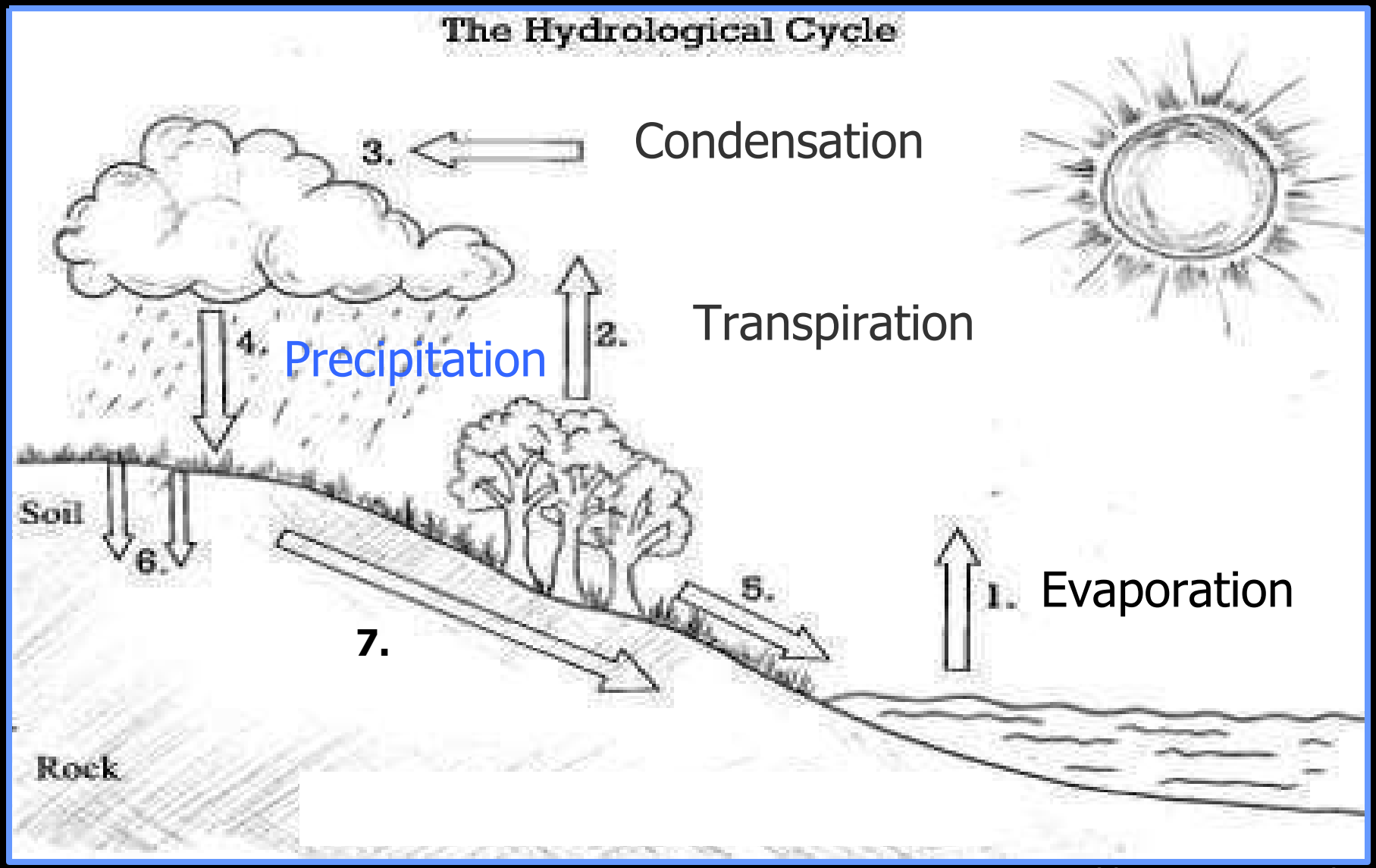

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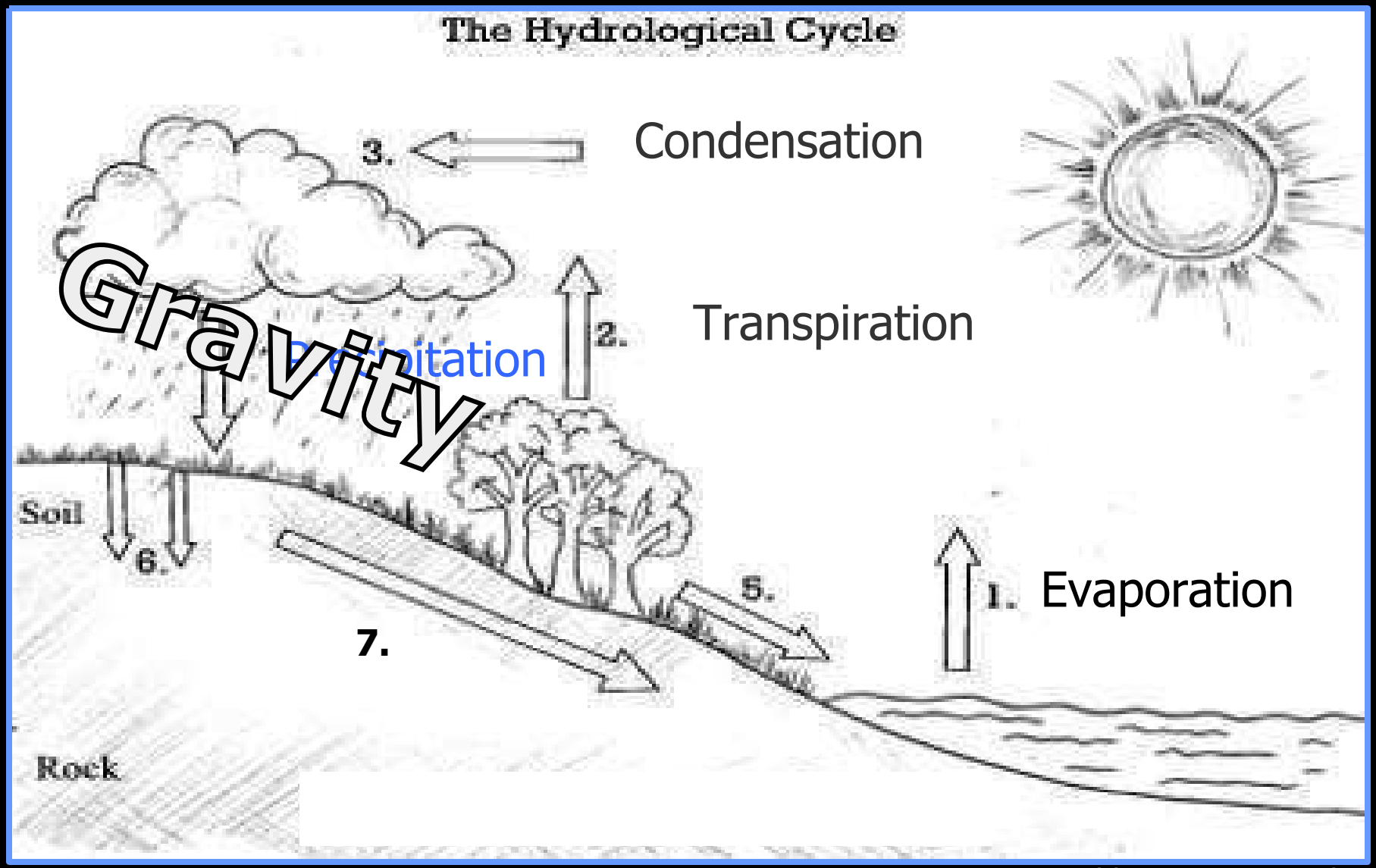

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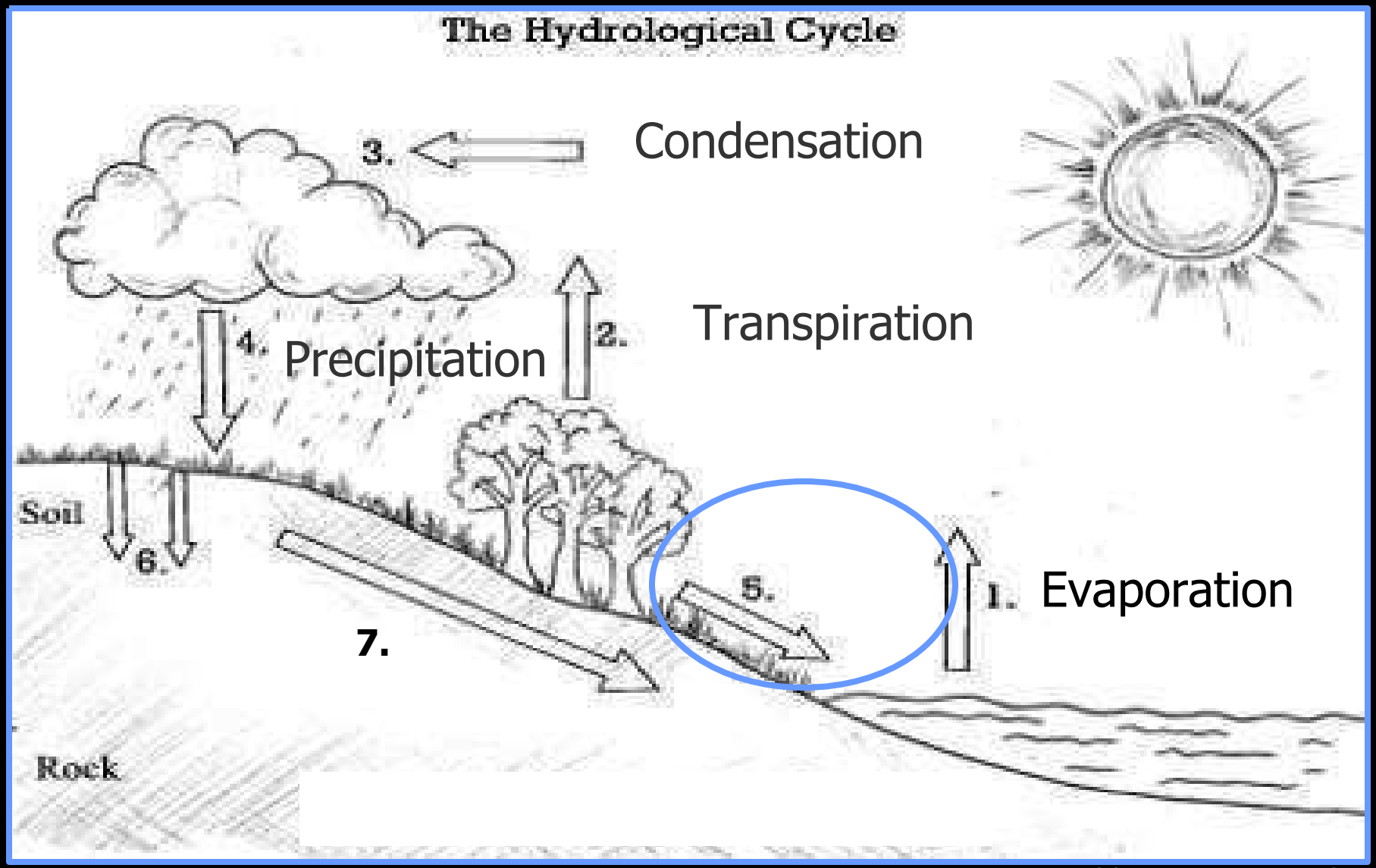

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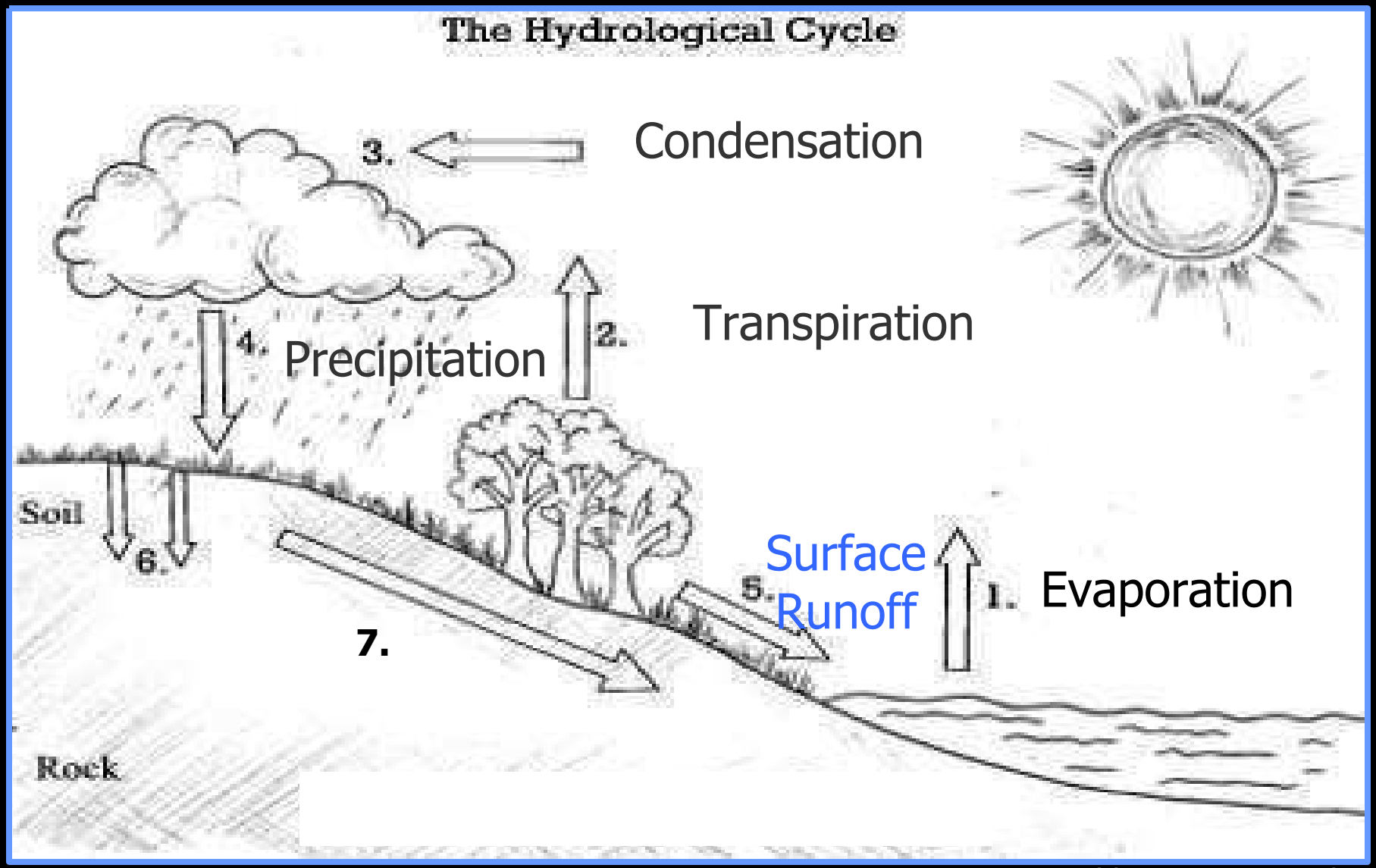

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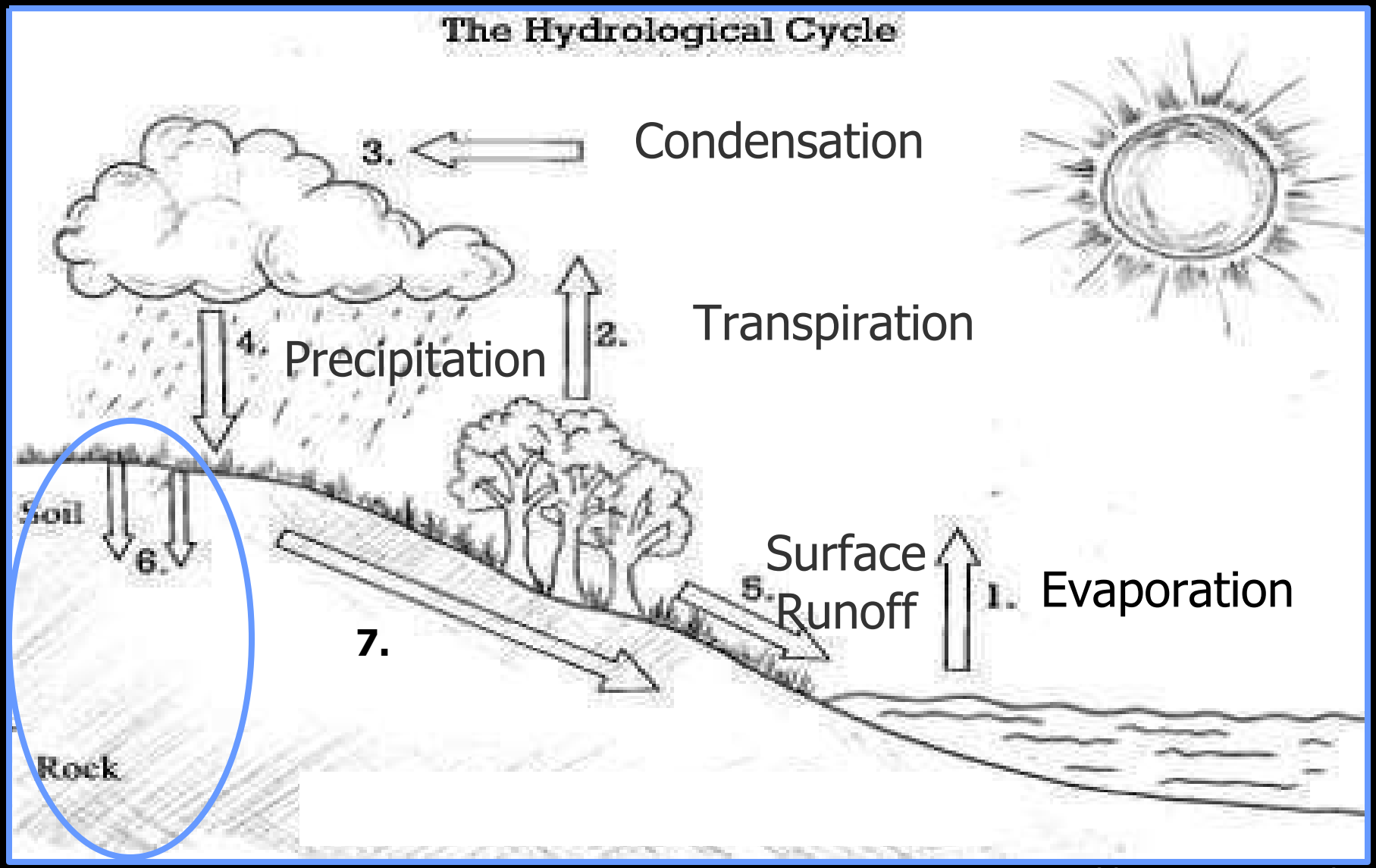

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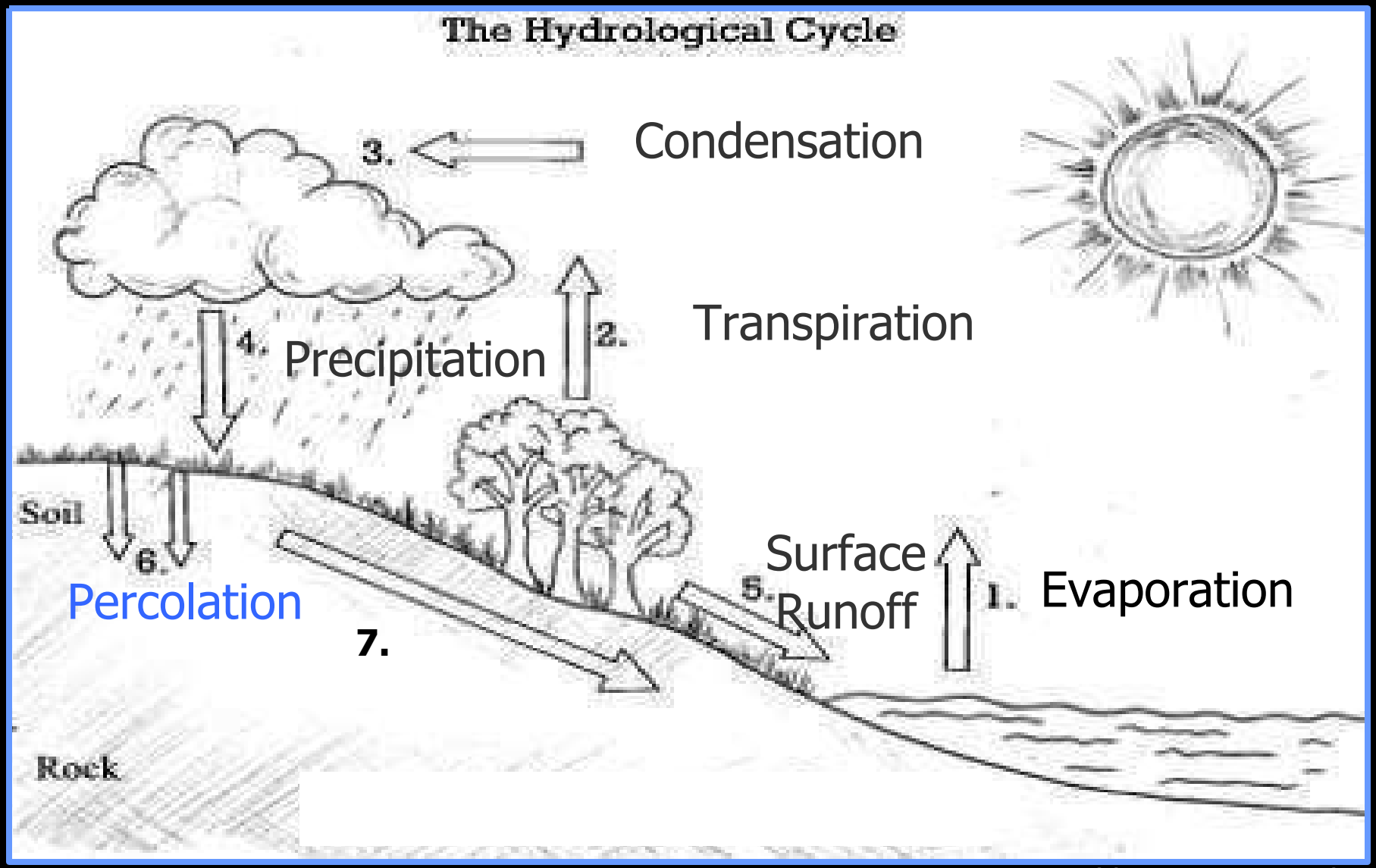

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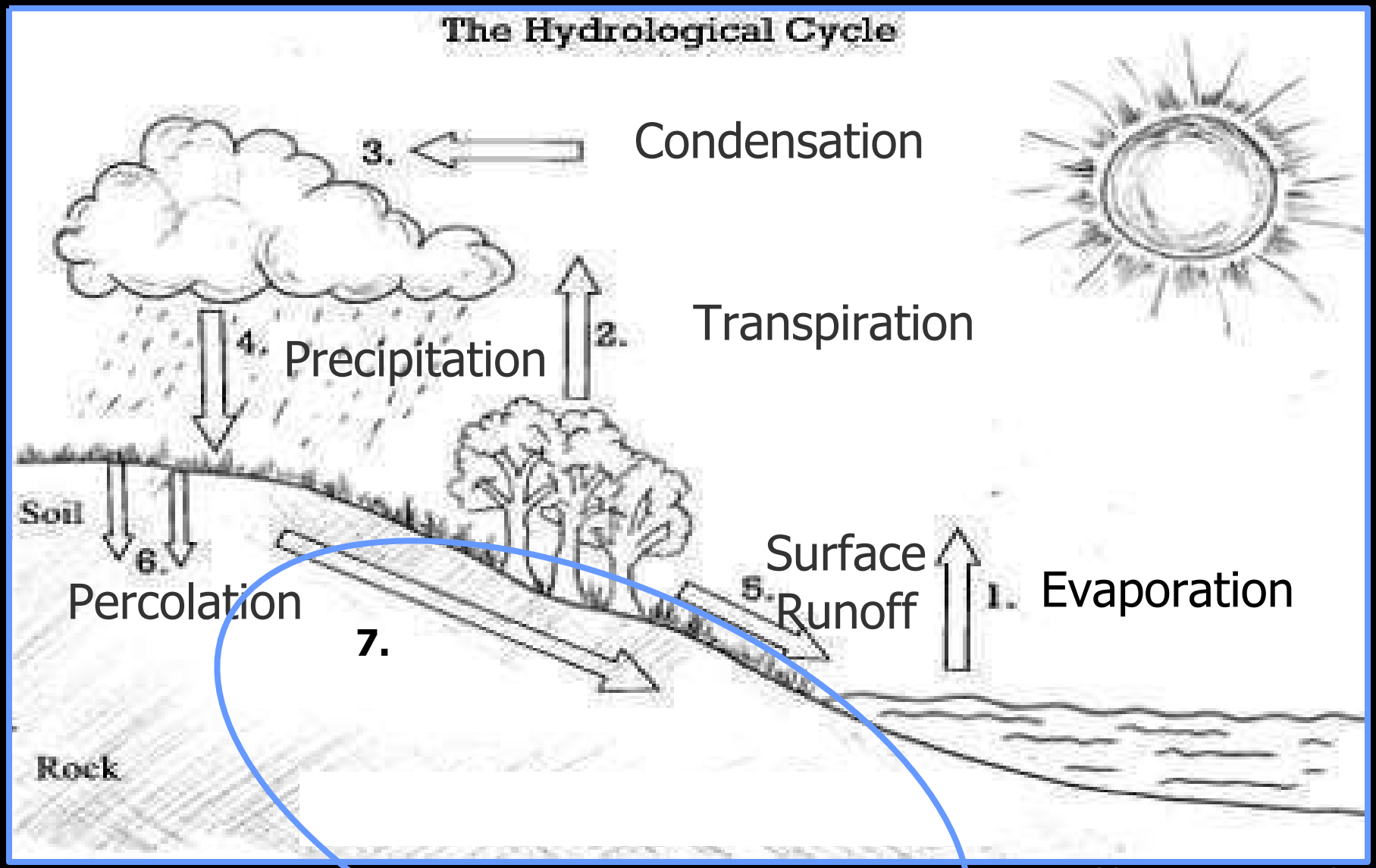

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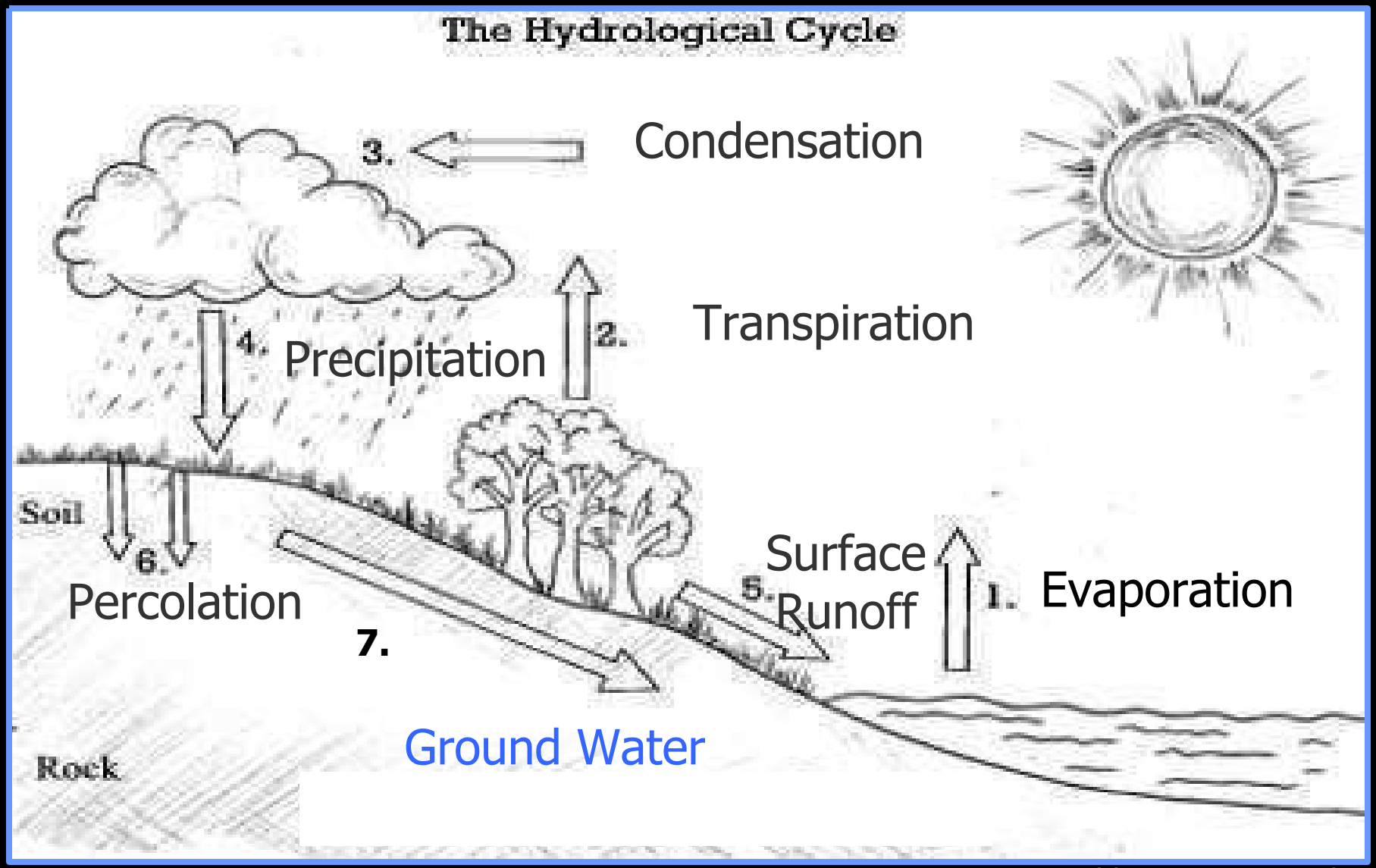

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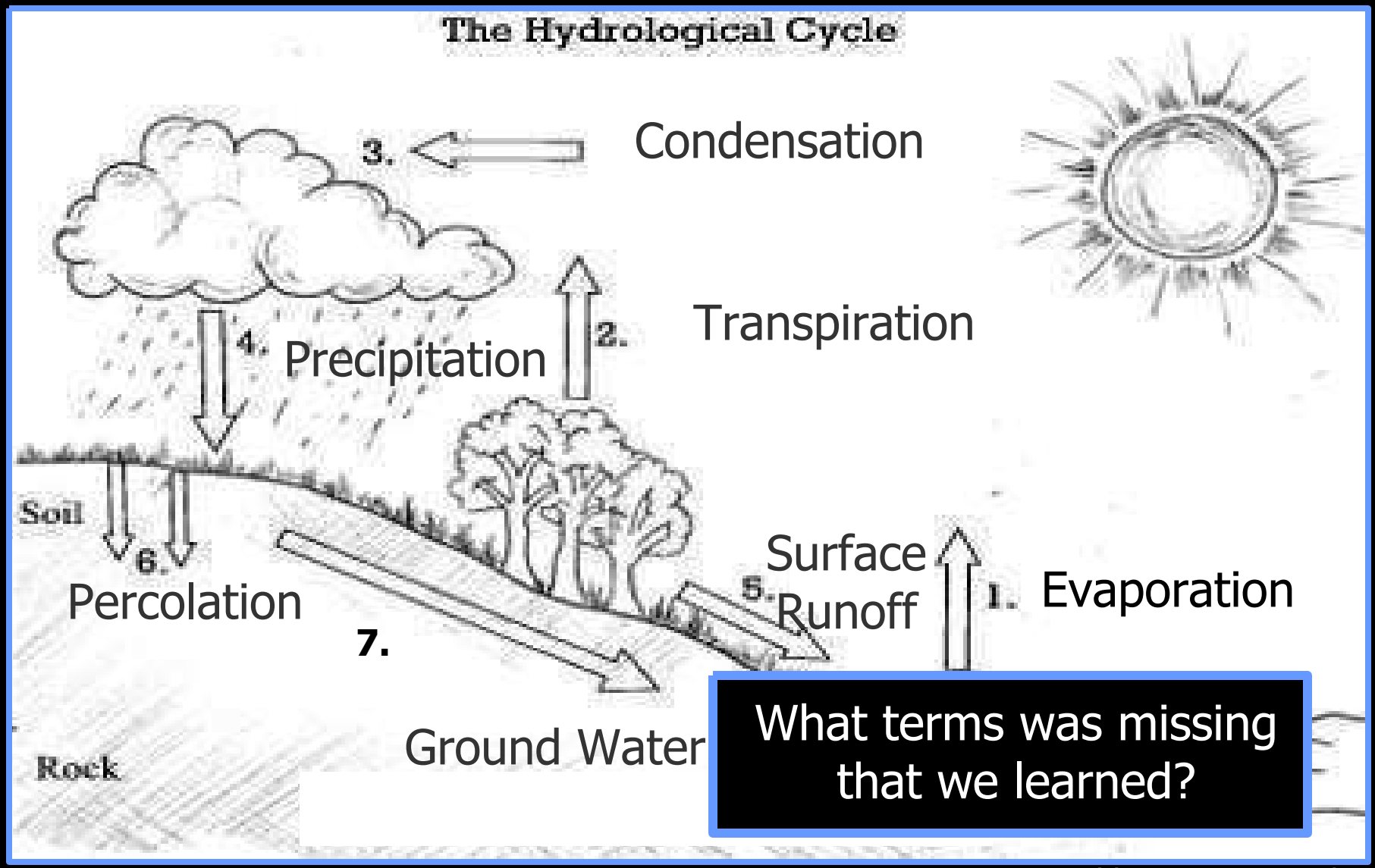

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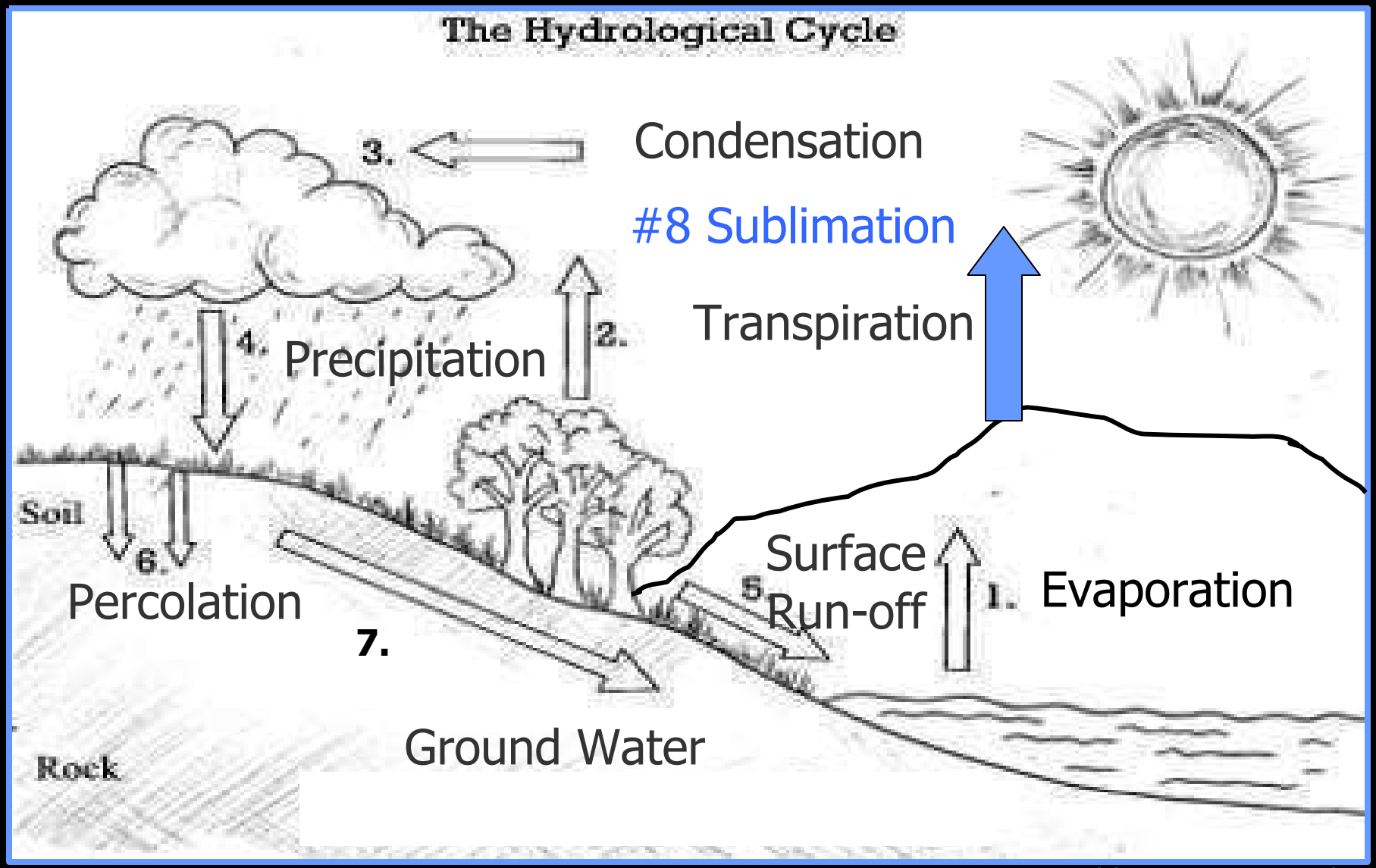
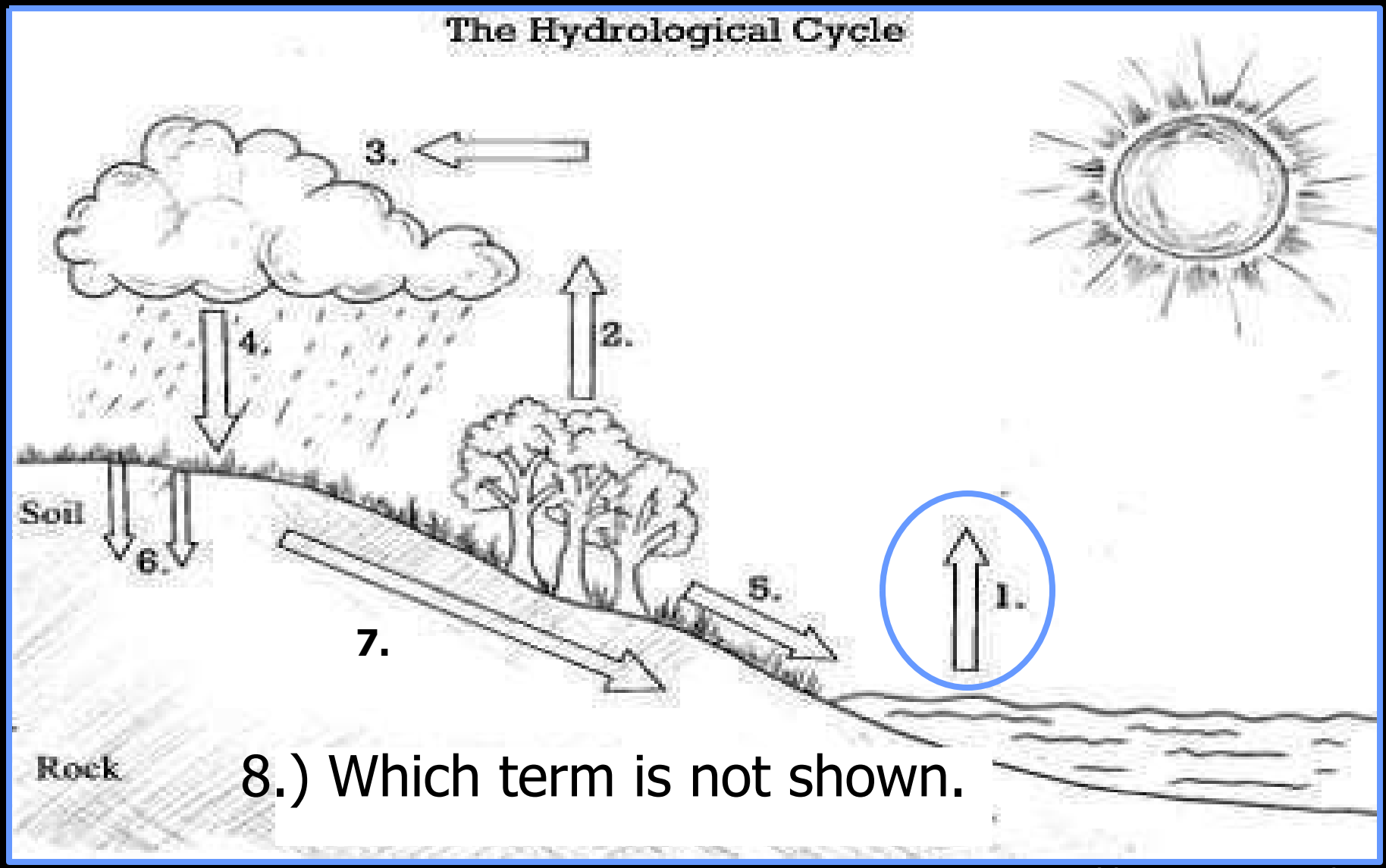



KAY
STARR
ONE
MORE
TIME


KAY STARR
ONE MORE TIME
"For those who haven't contributed yet…"

- Quiz 1-8 The hydrologic cycle. Please record the numbers and the correct term.



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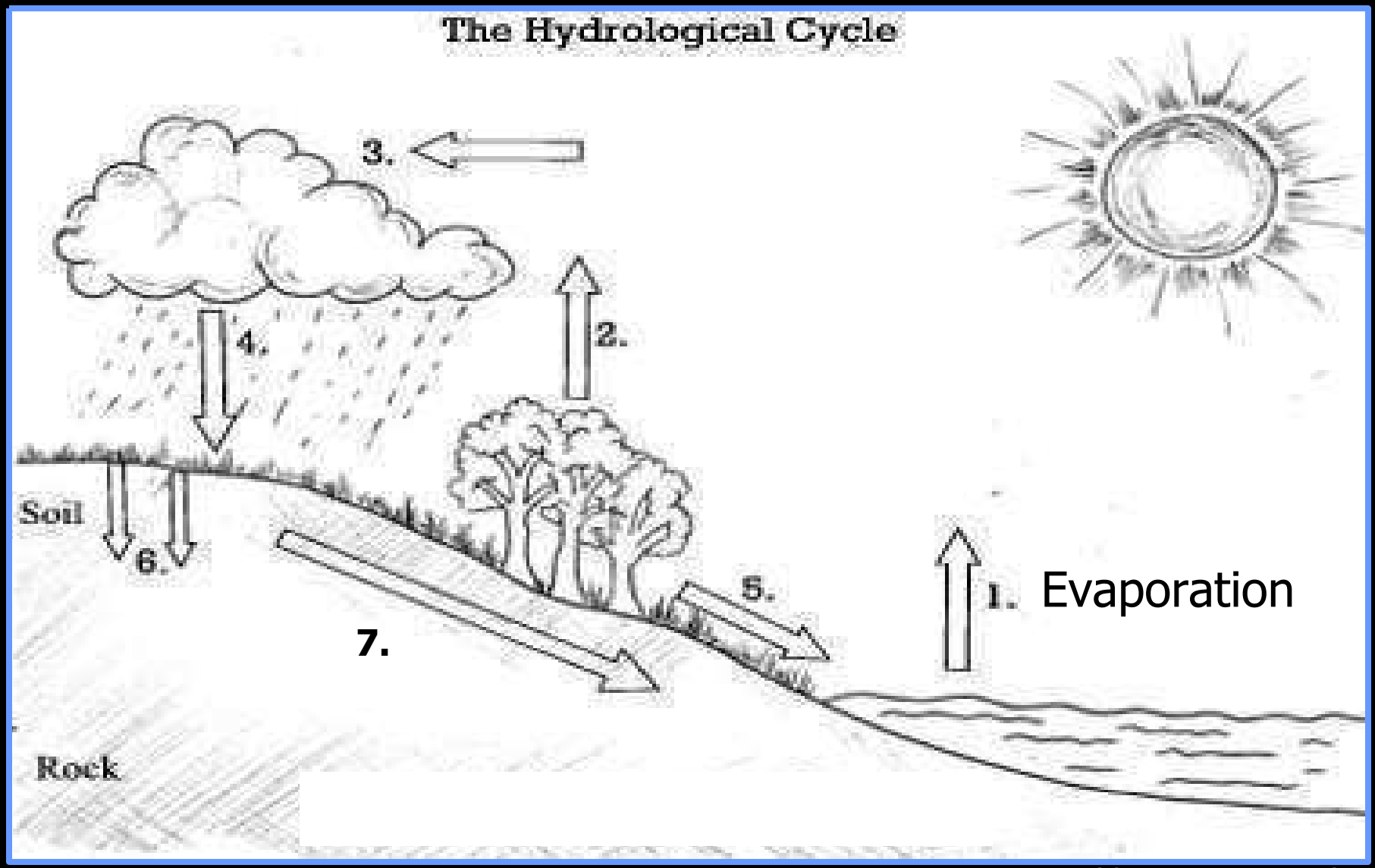

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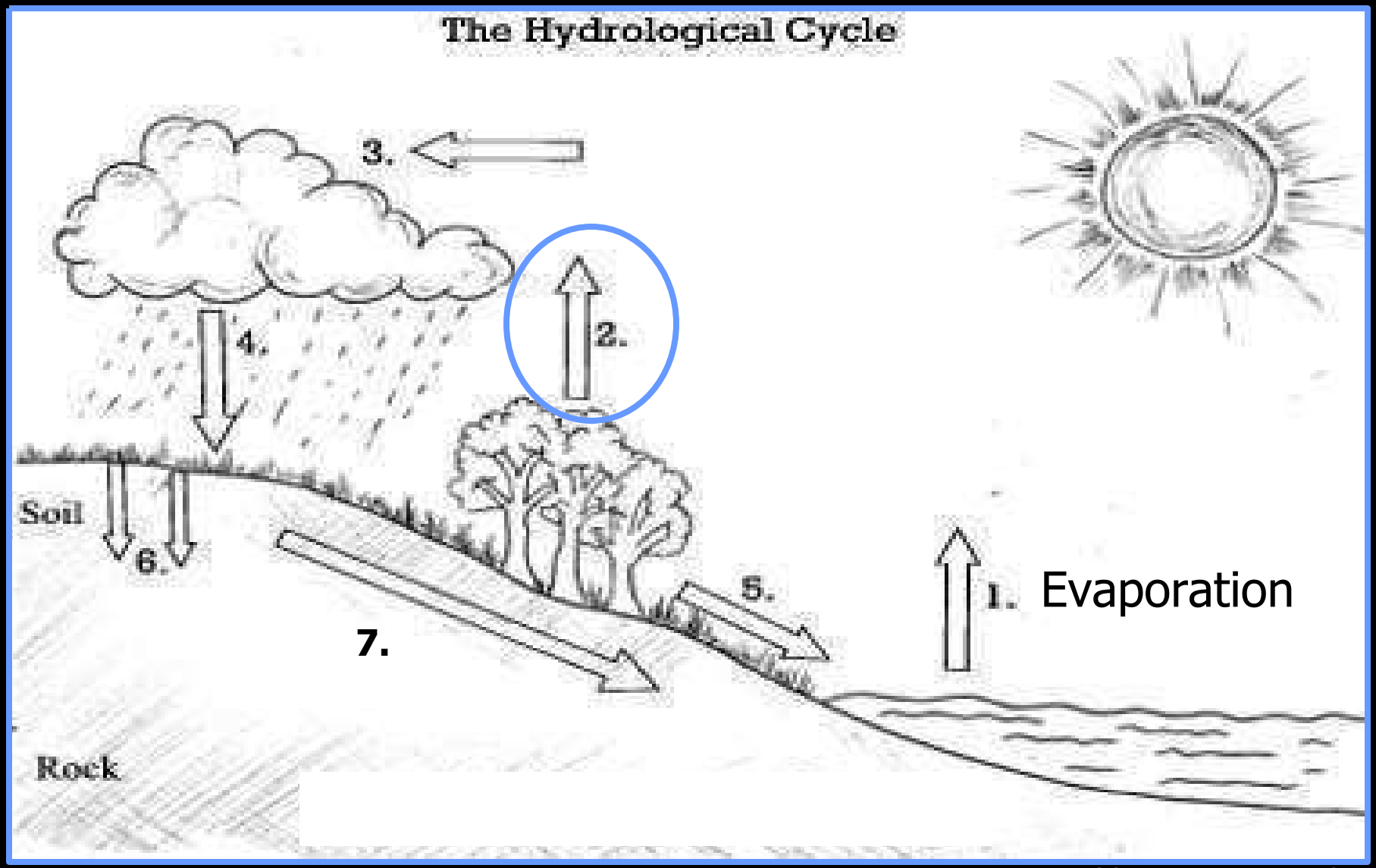

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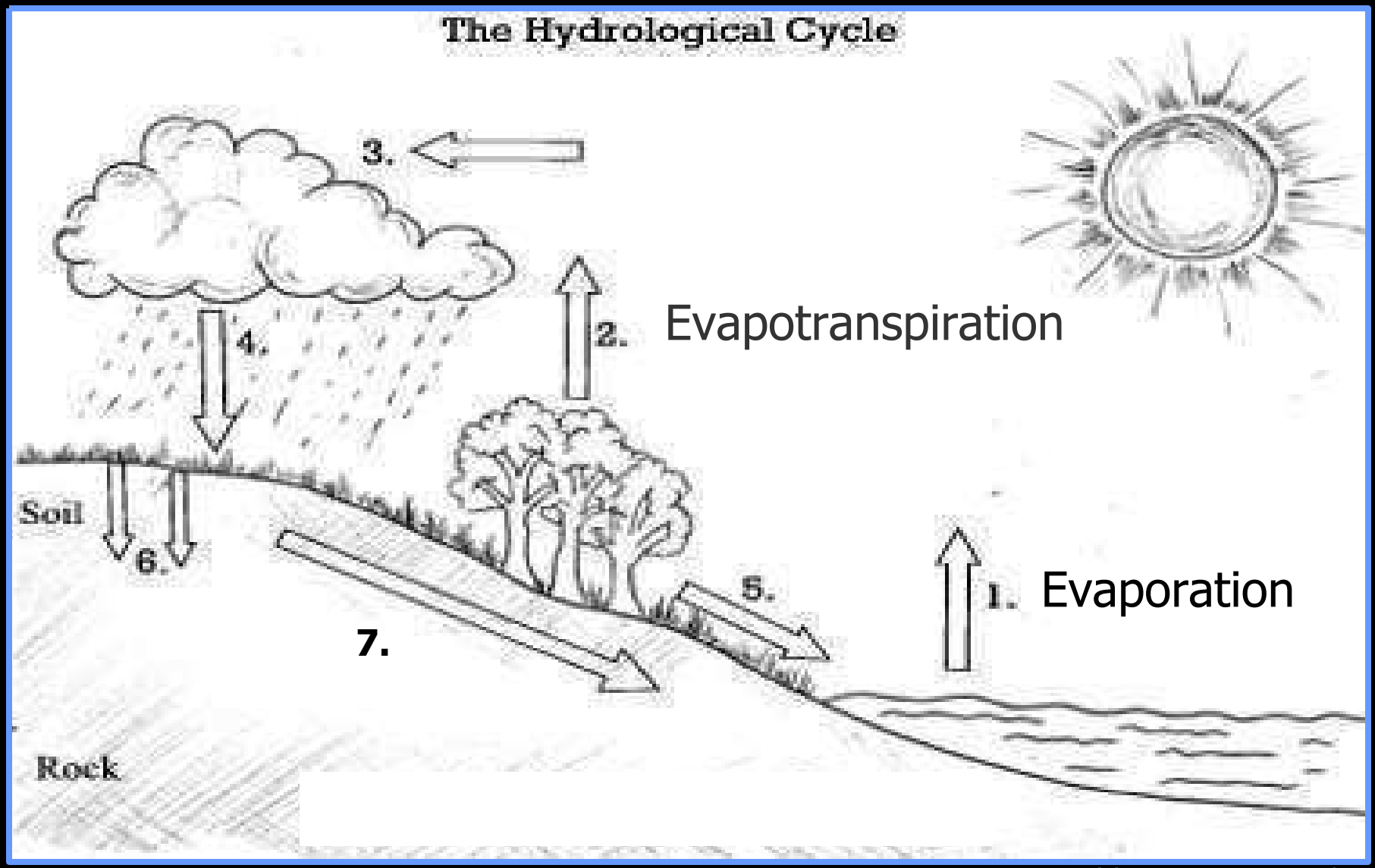

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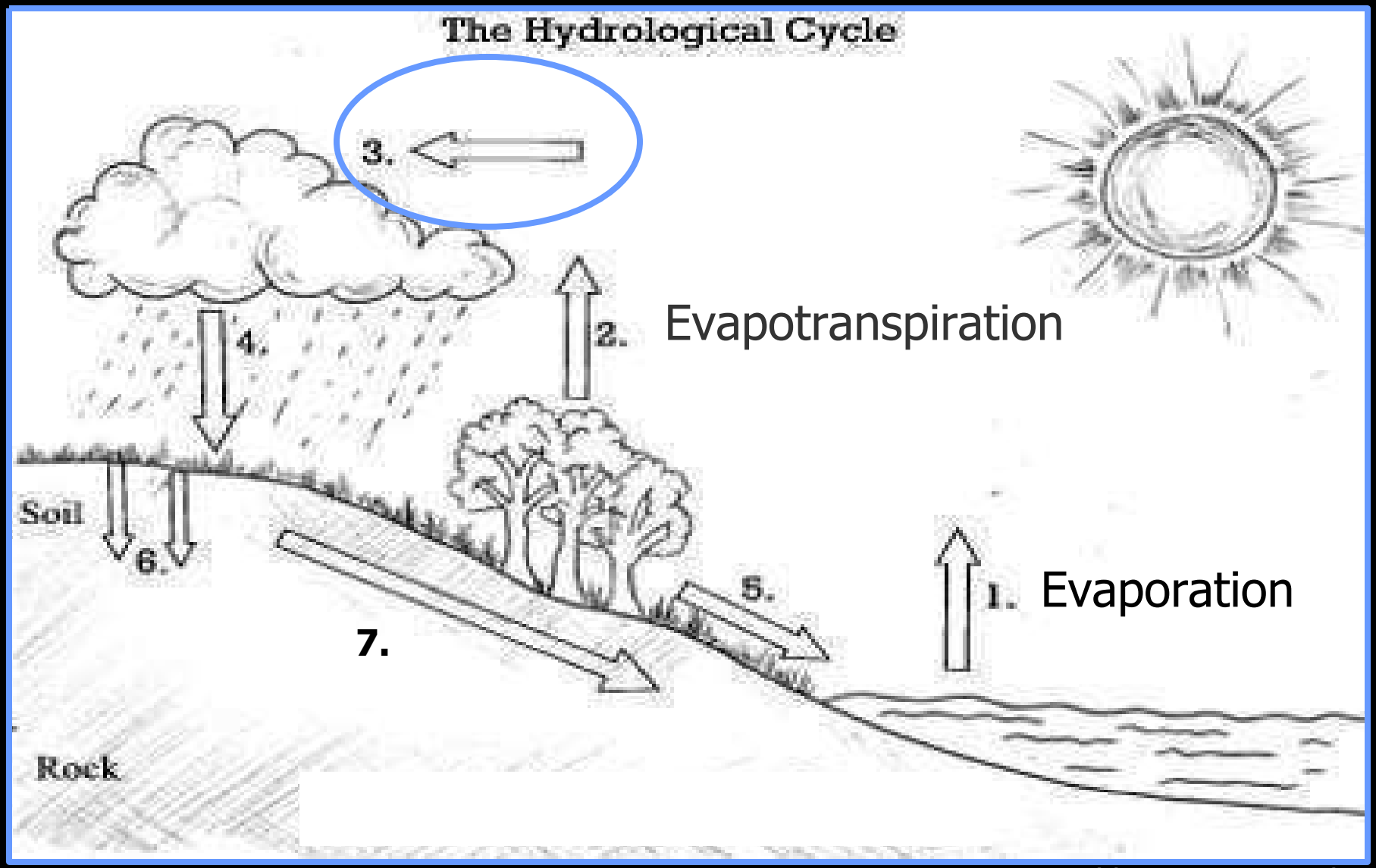

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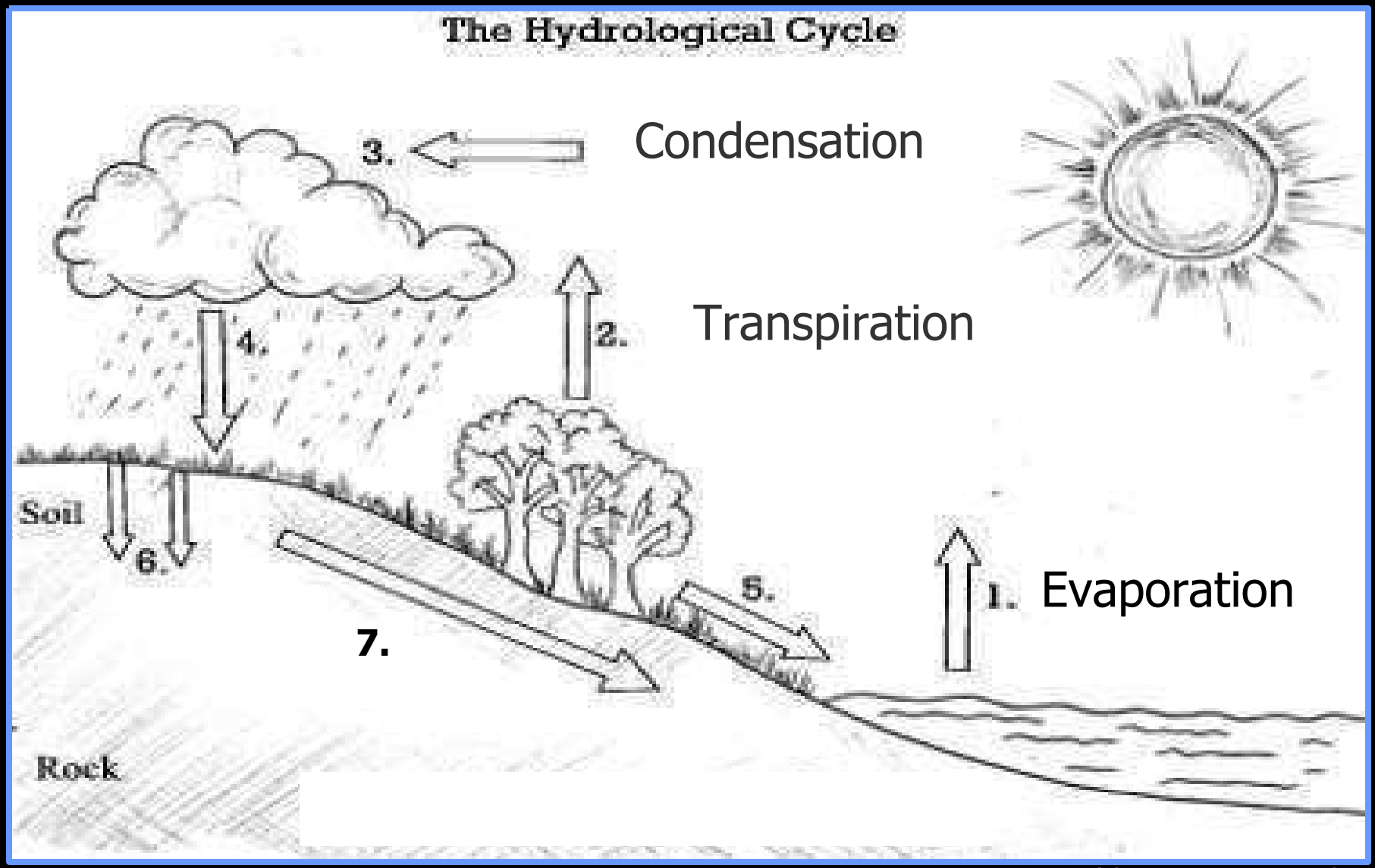

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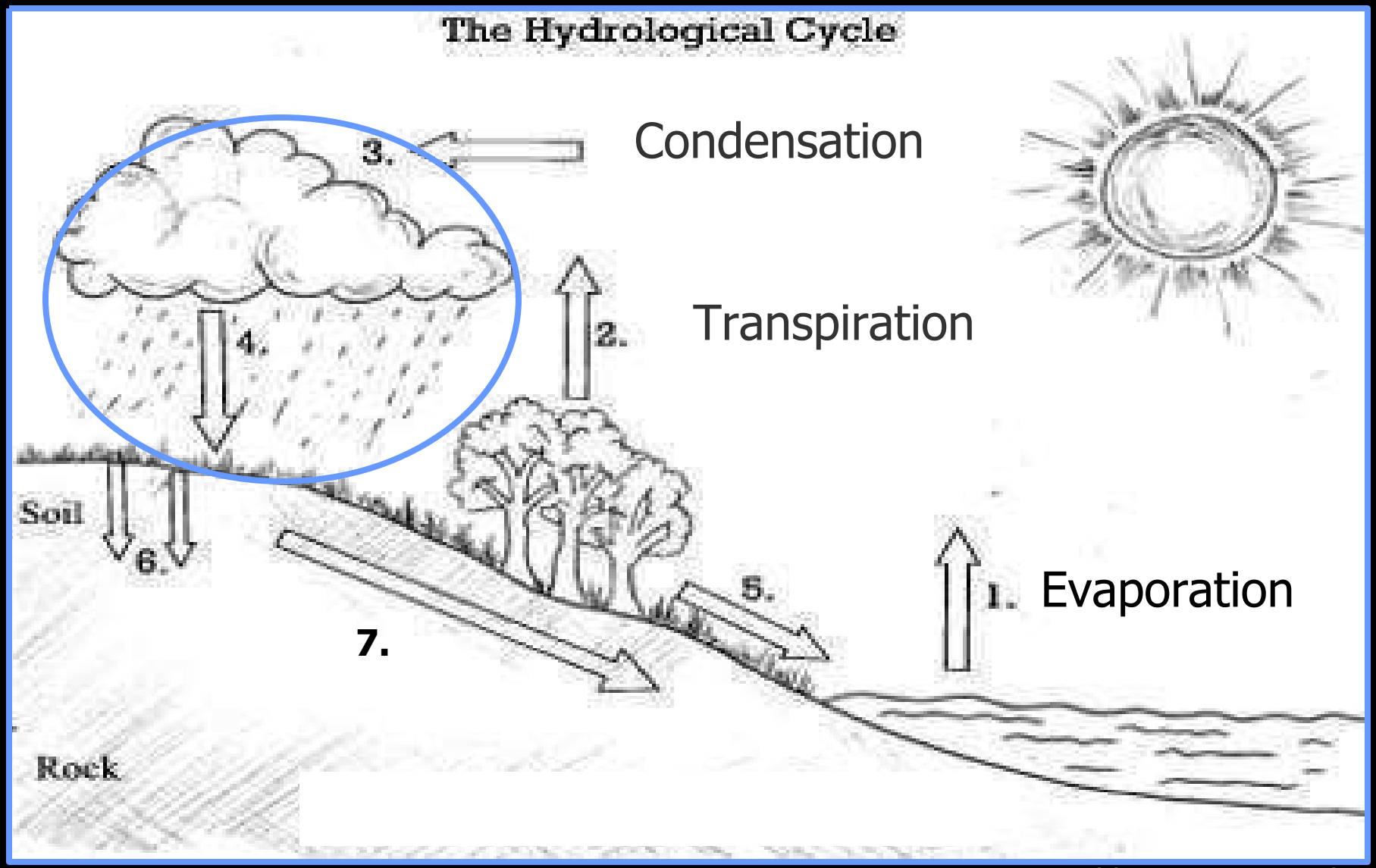

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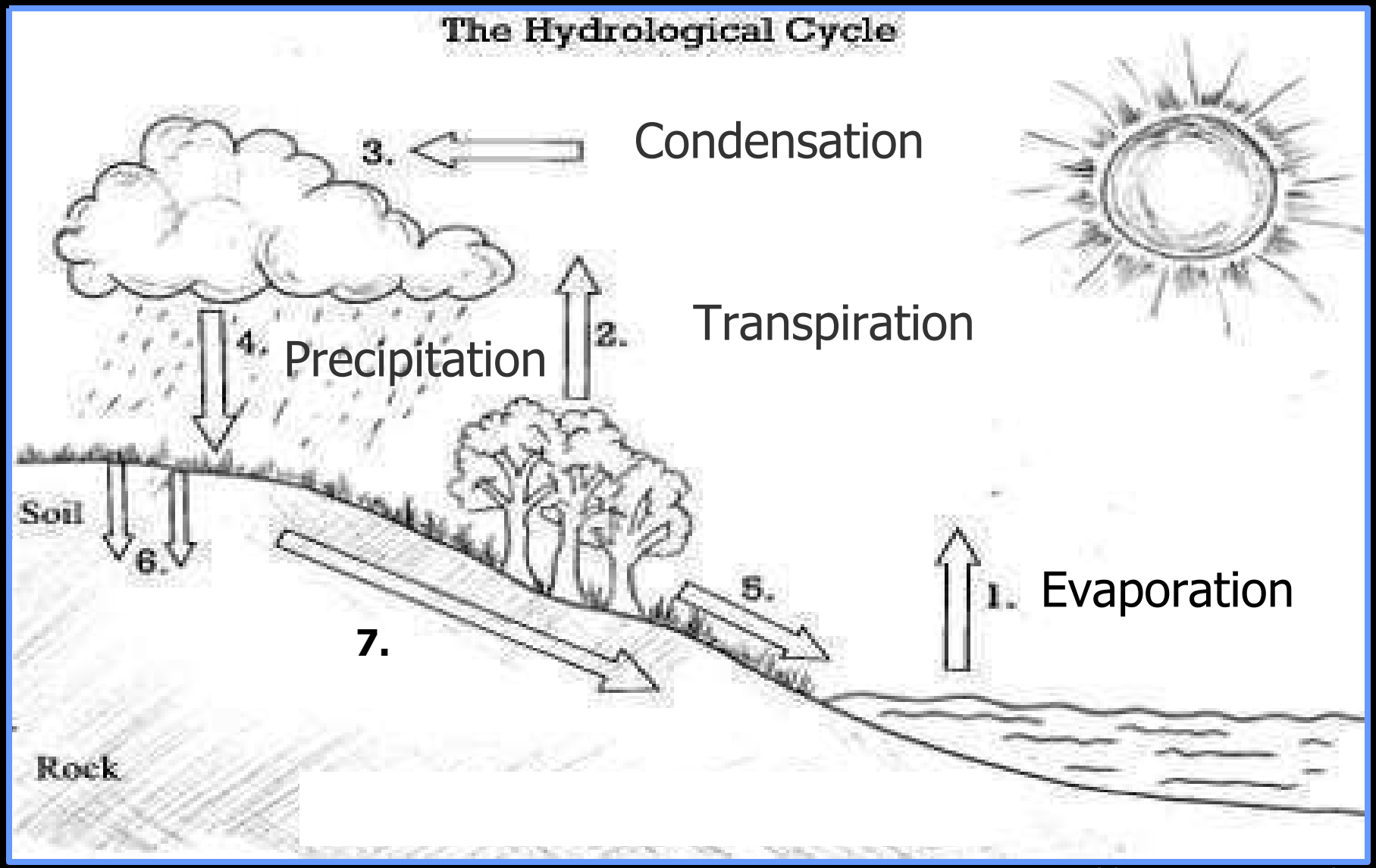

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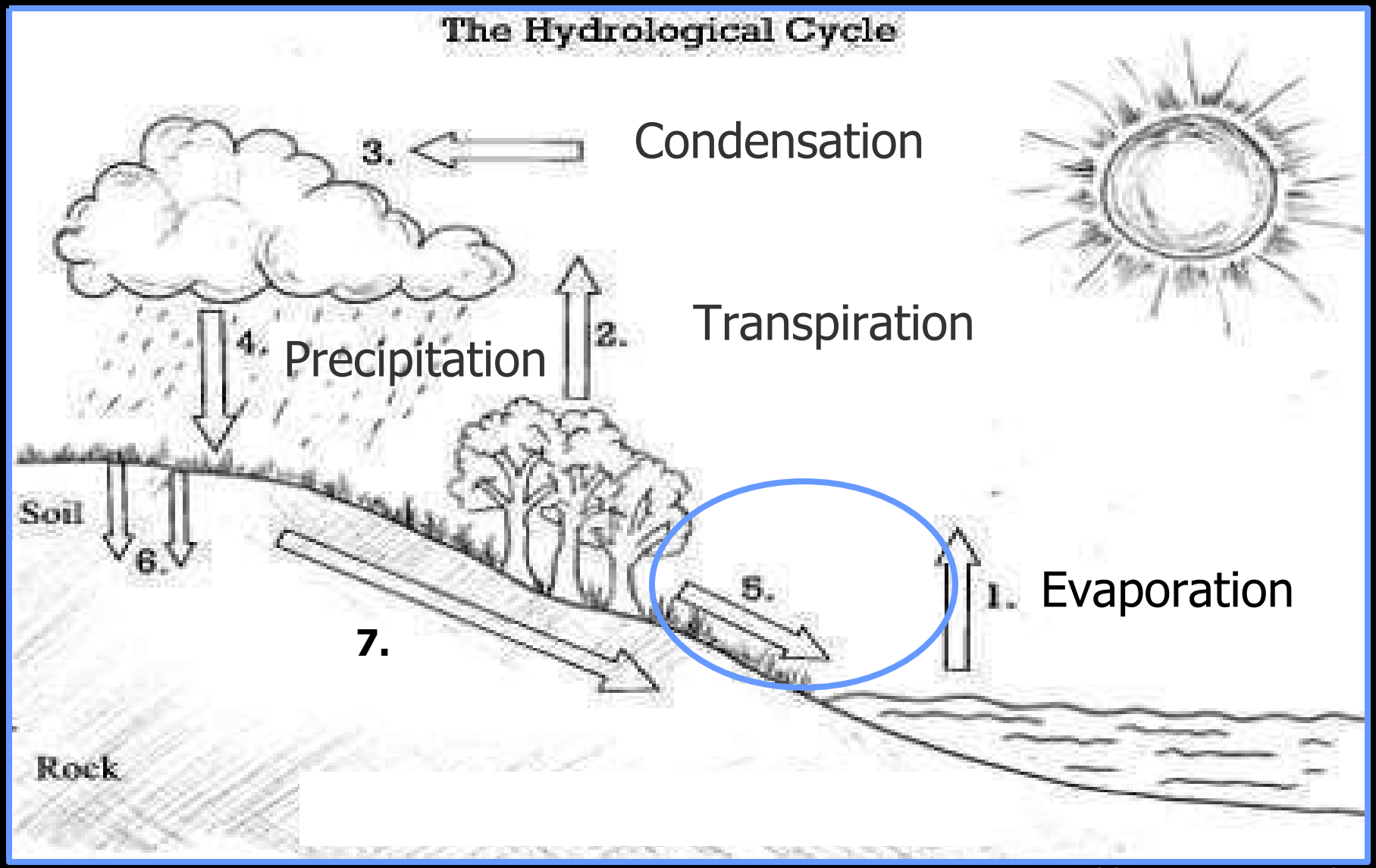

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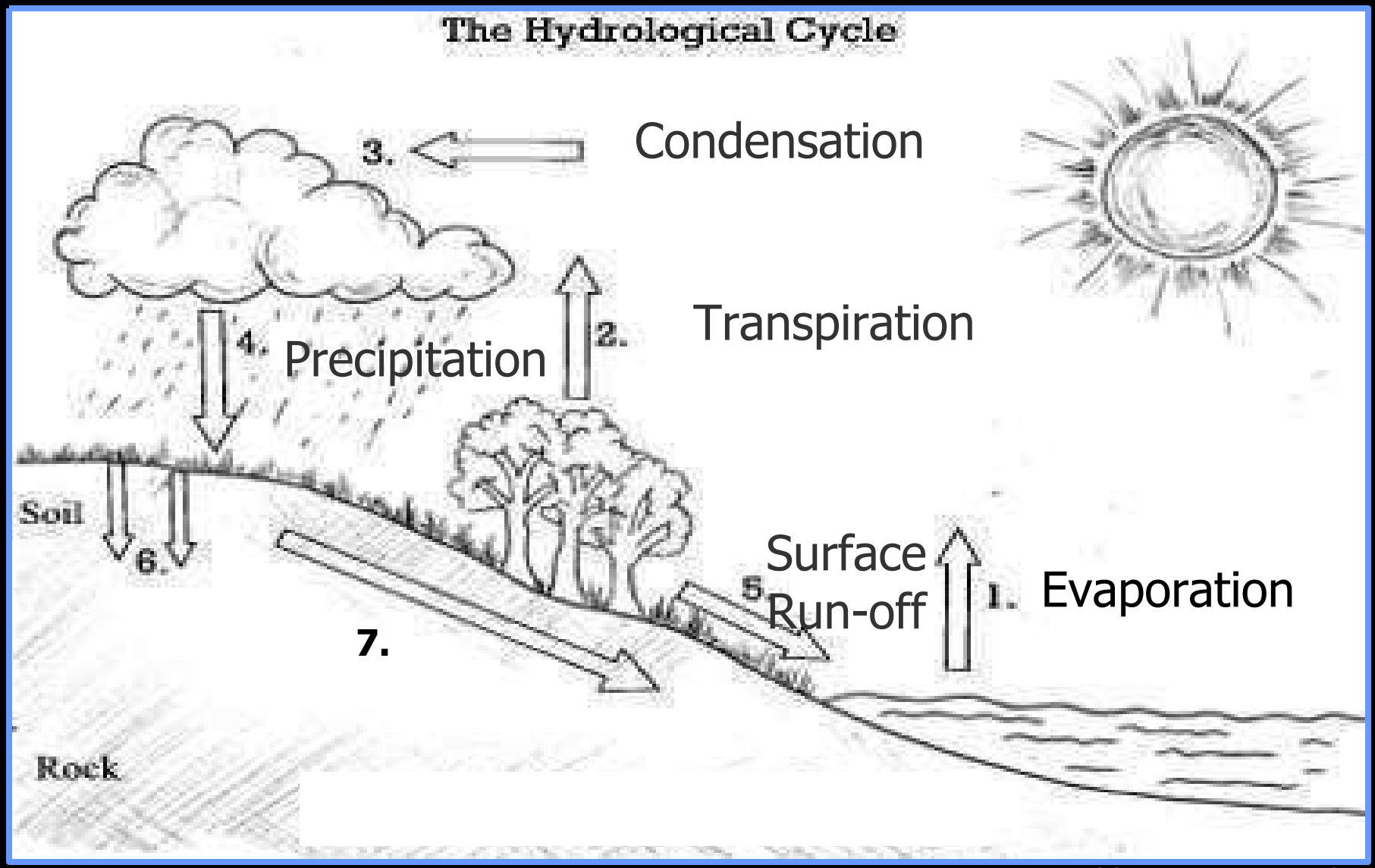

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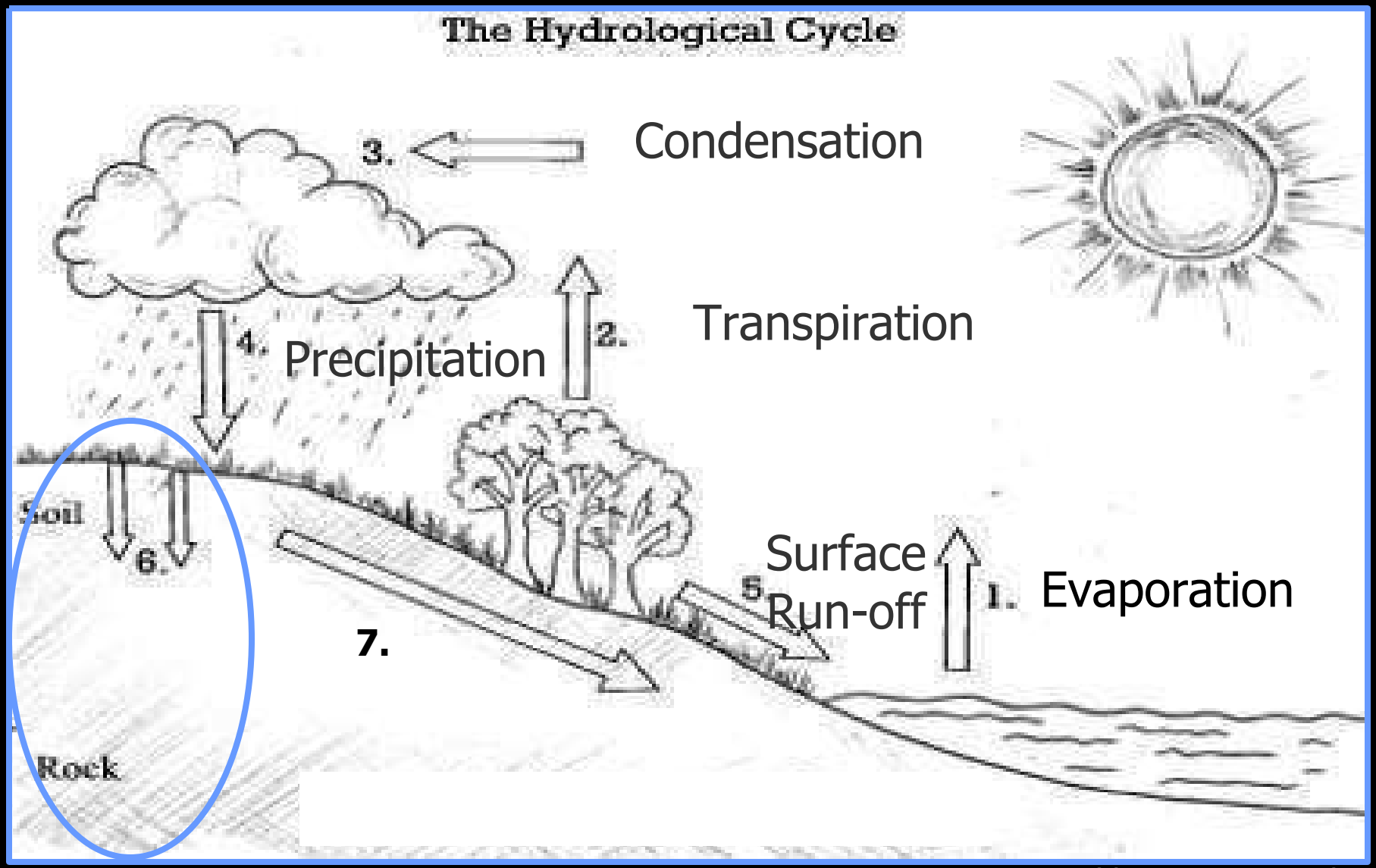

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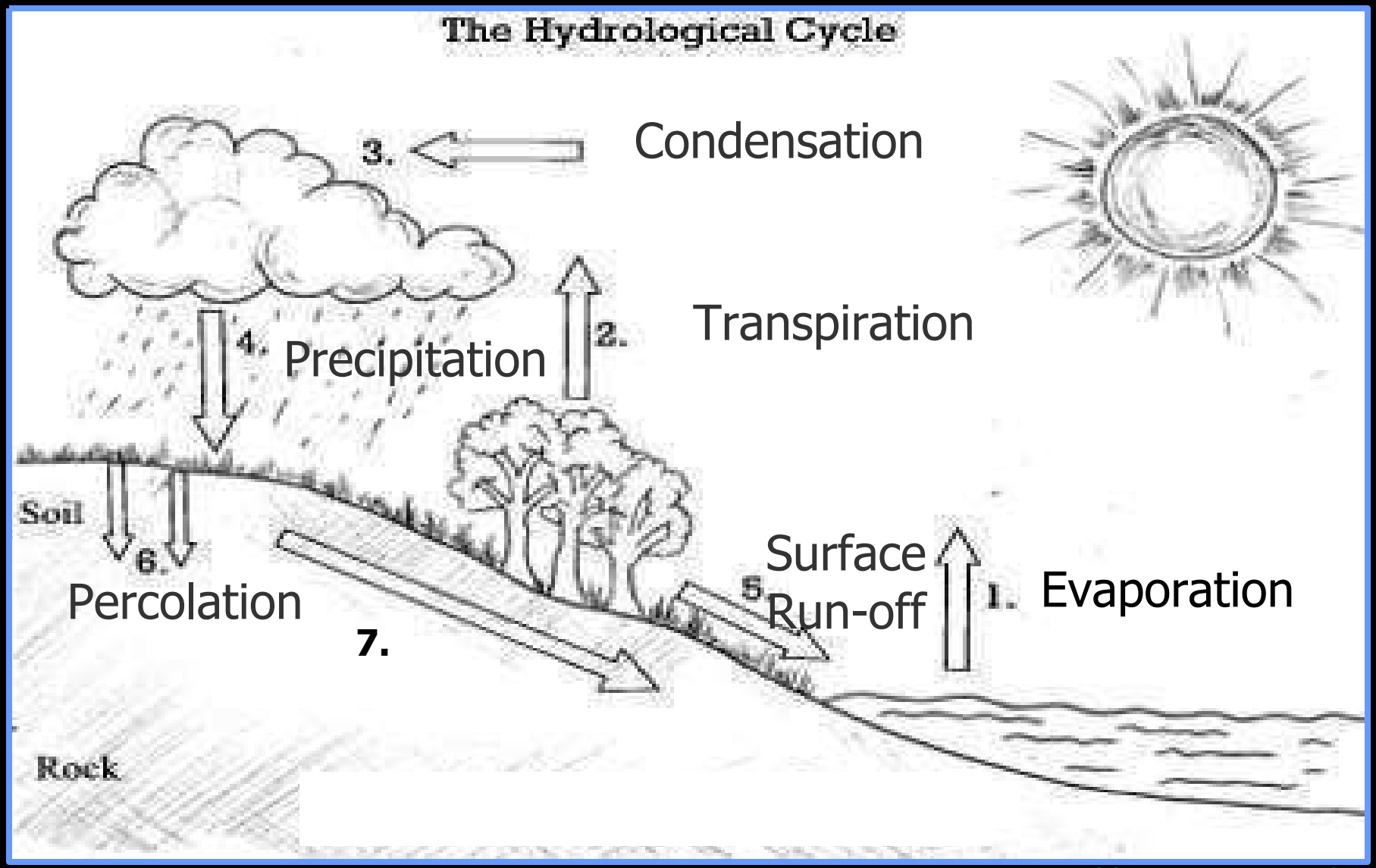

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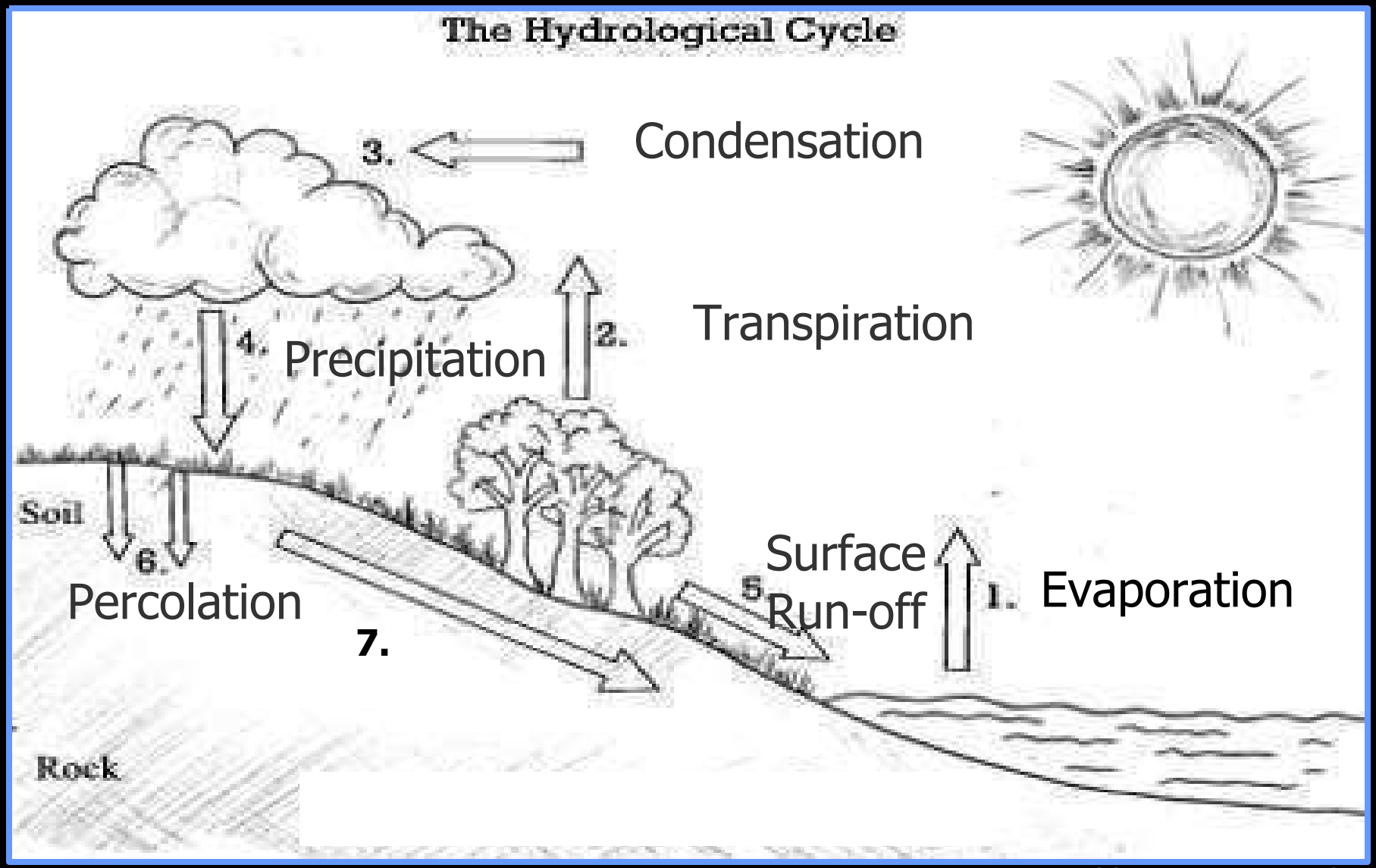

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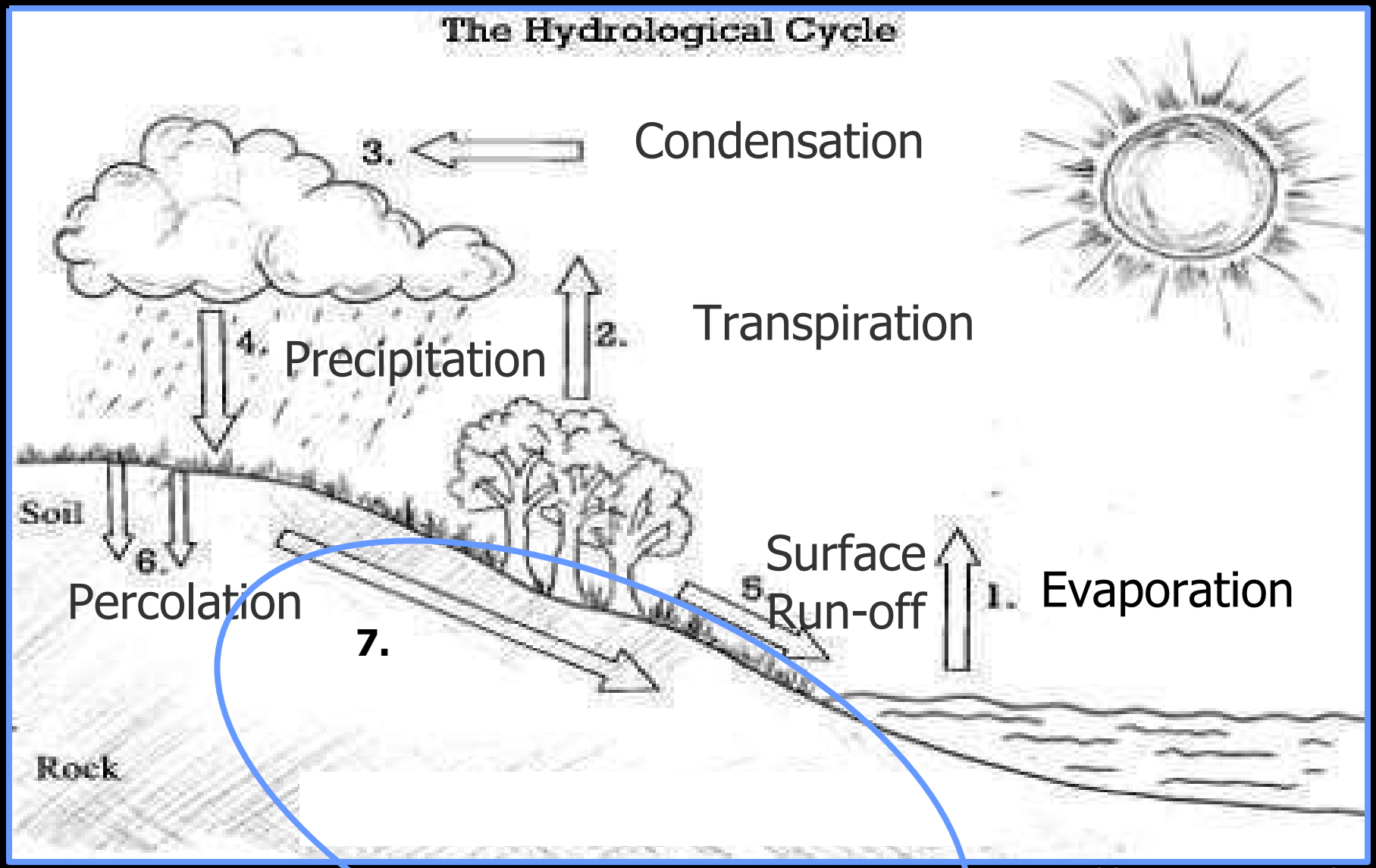

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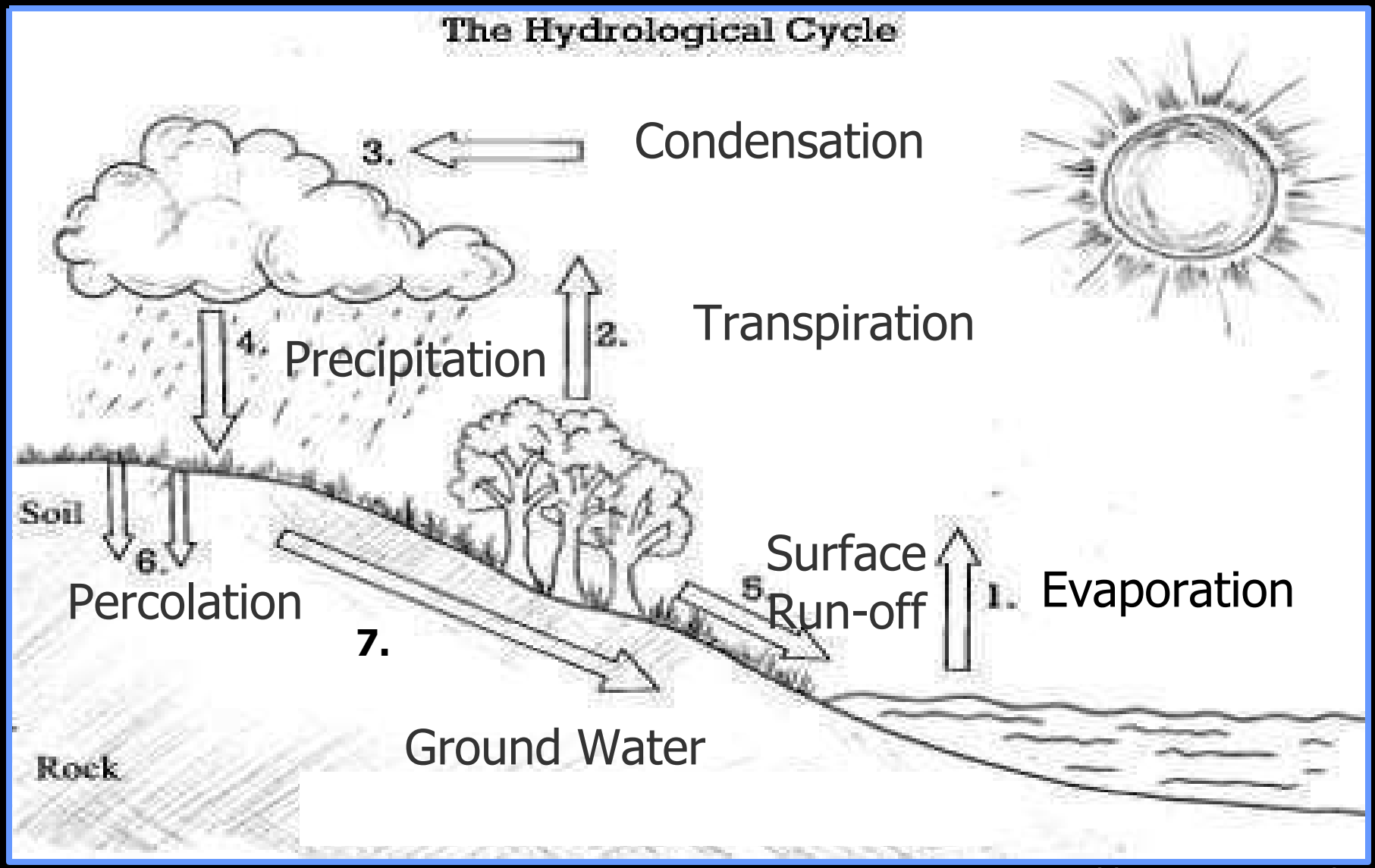

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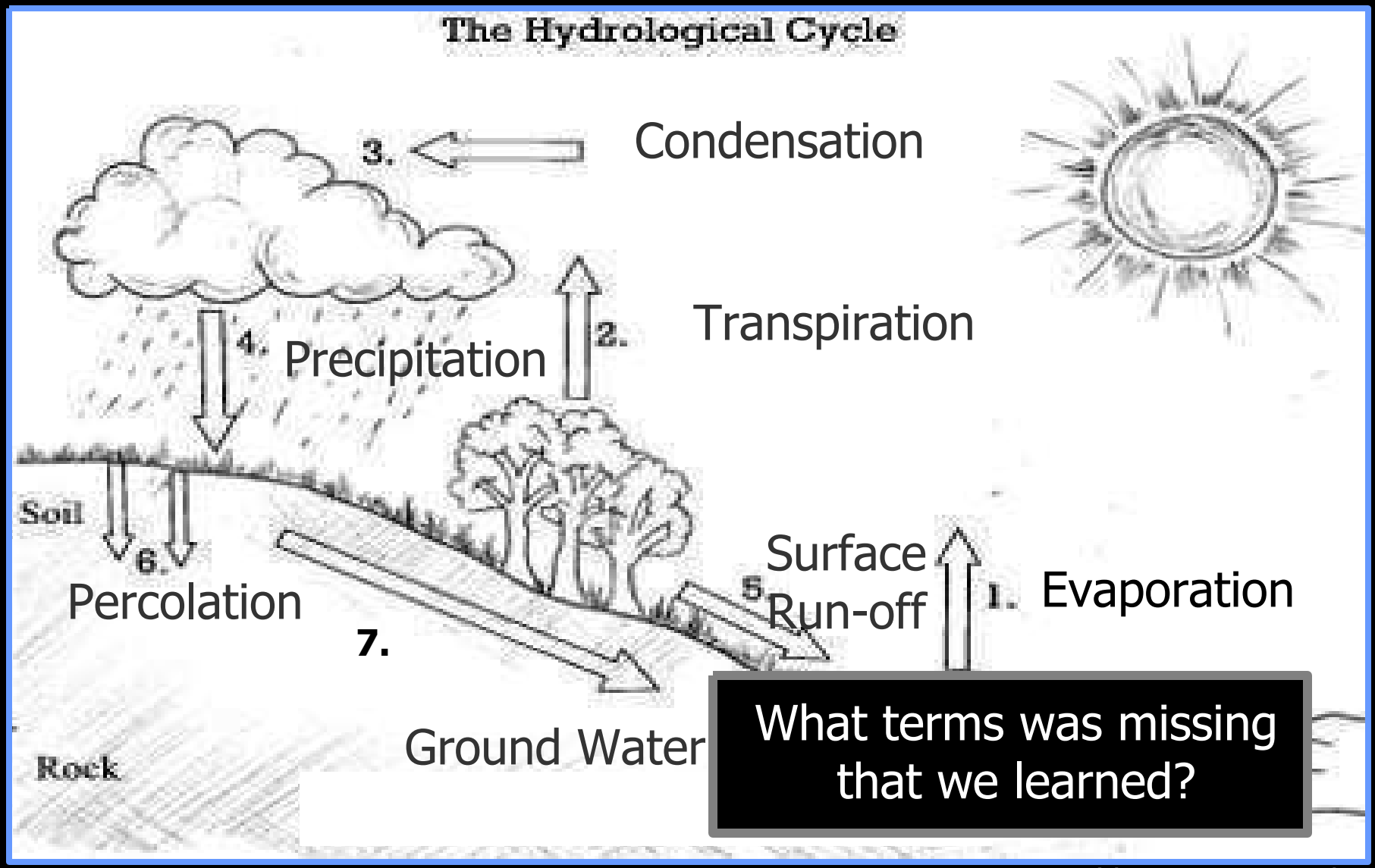

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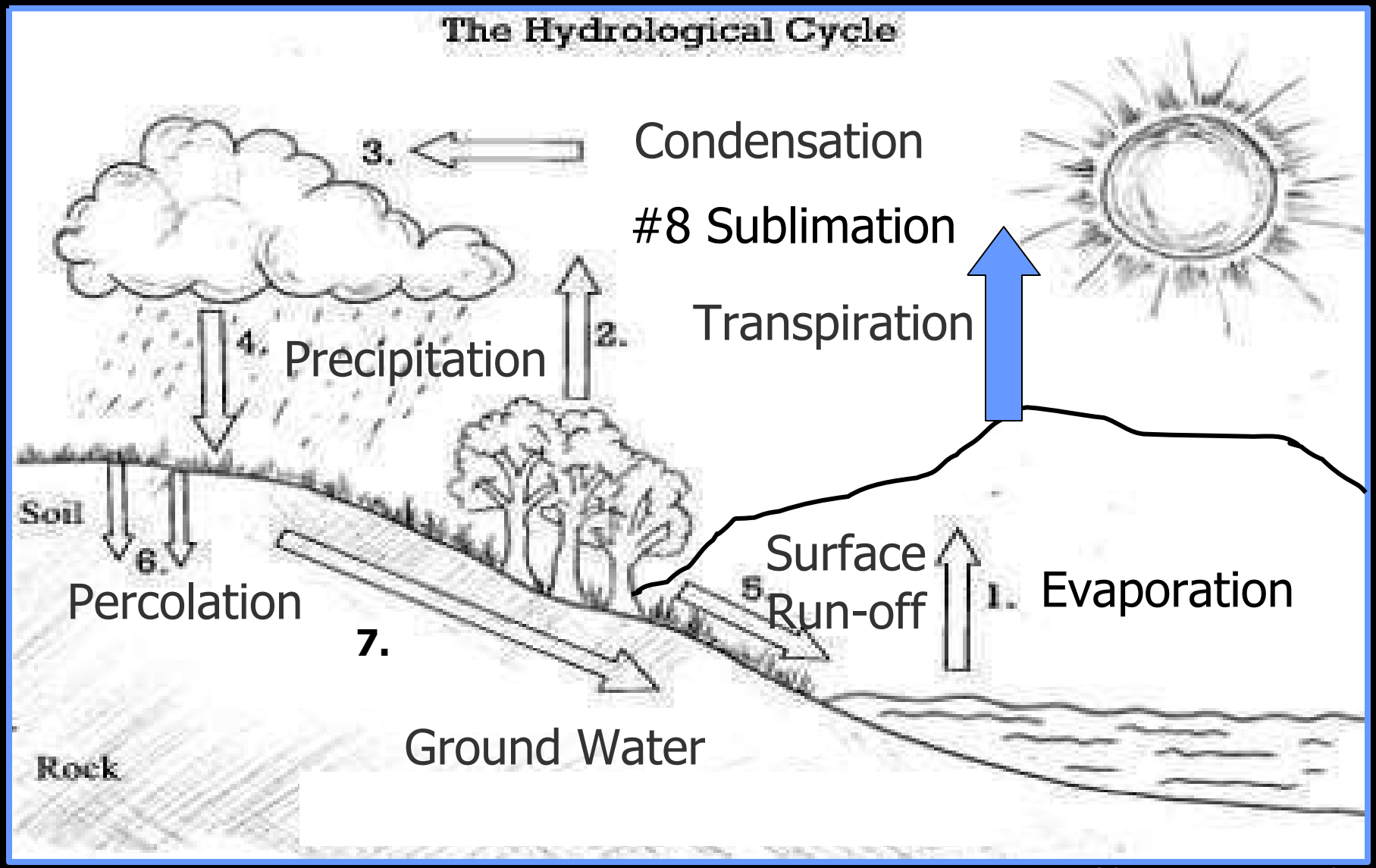
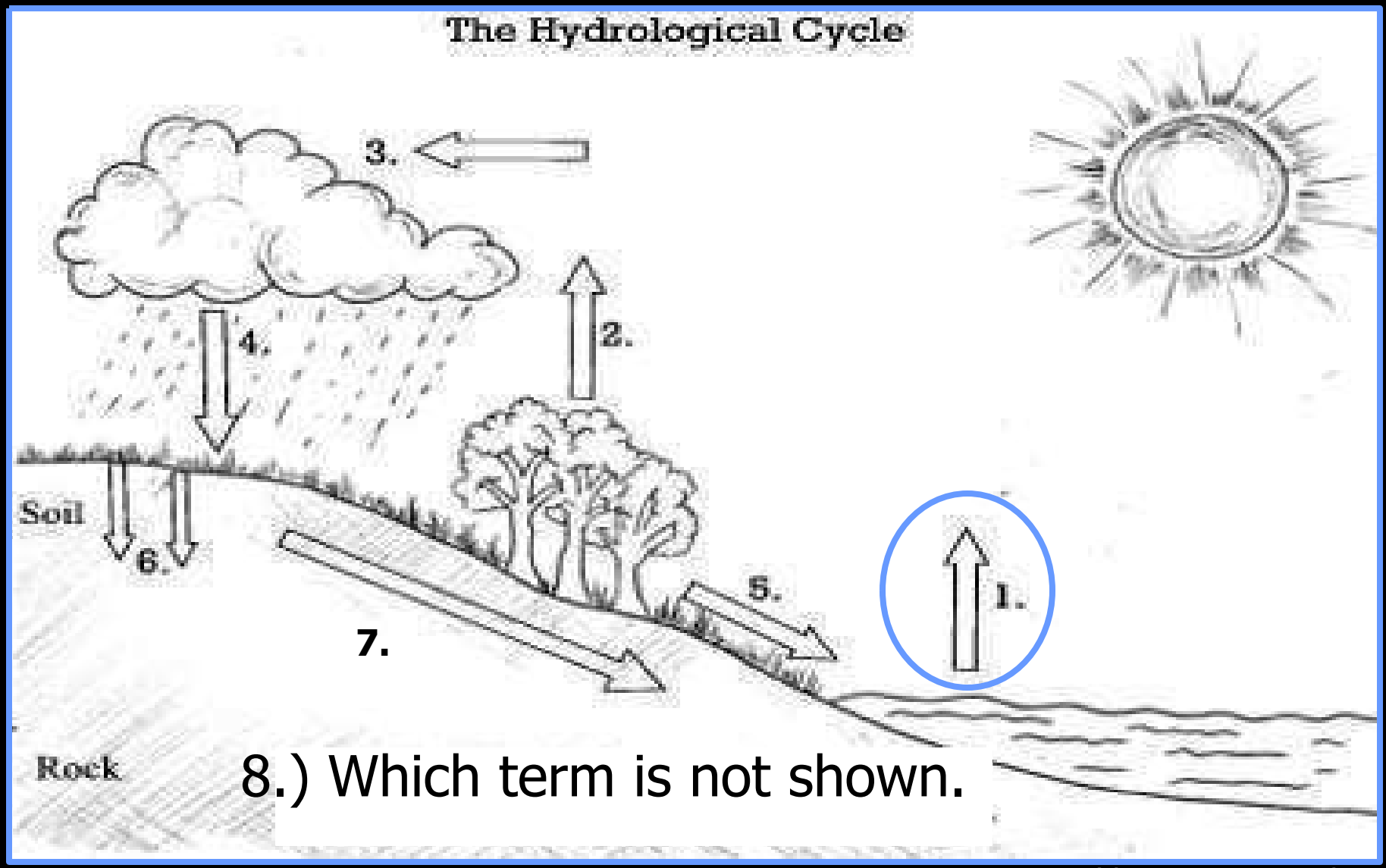



real mccoy
one more time

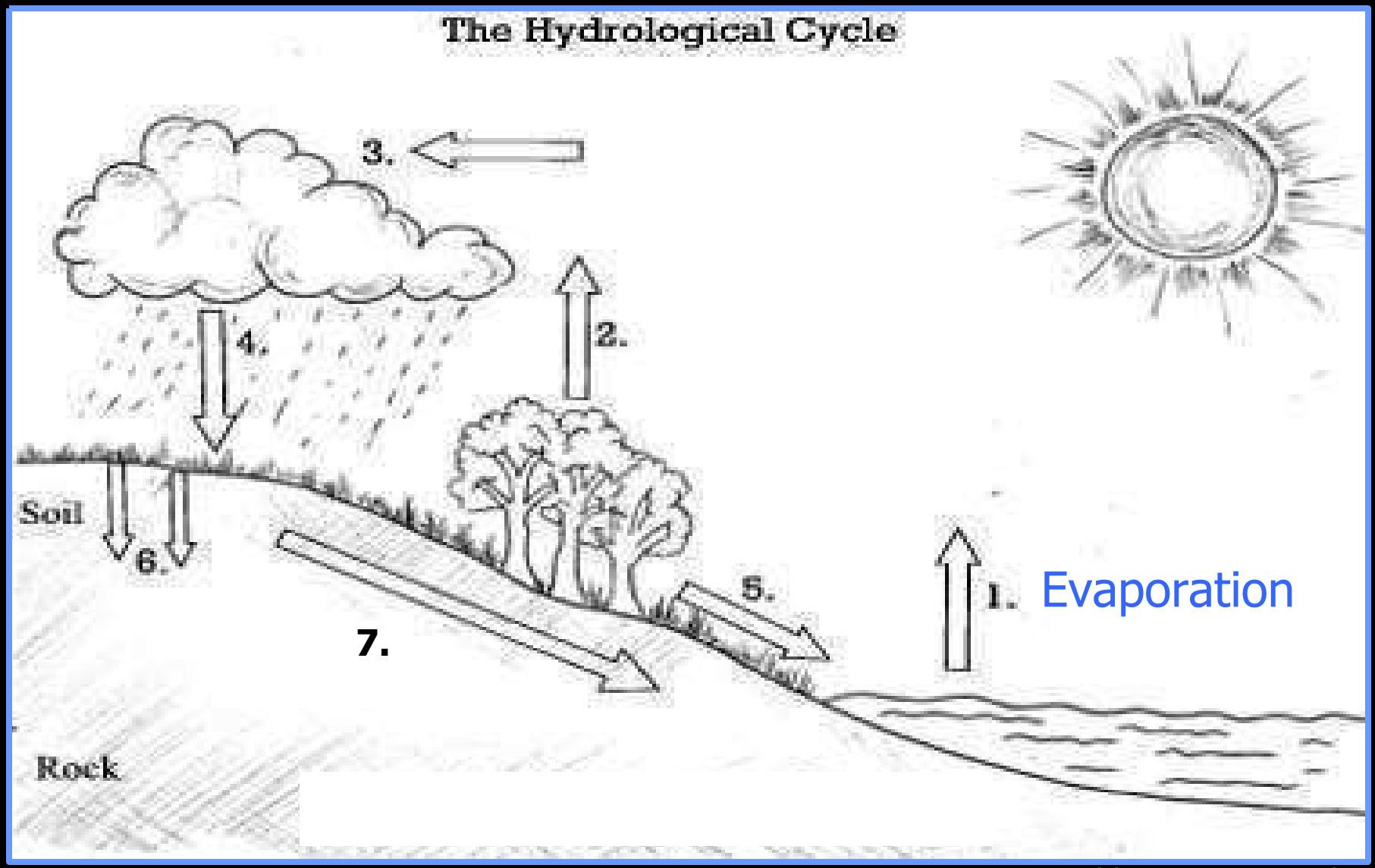

real mccoy
one more time
"There are a few who still haven't gone."...

- Quiz 1-8 The hydrologic cycle. Please record the numbers and the correct term.



8.) Which term is not shown.

- Answers1-8 The hydrologic cycle.



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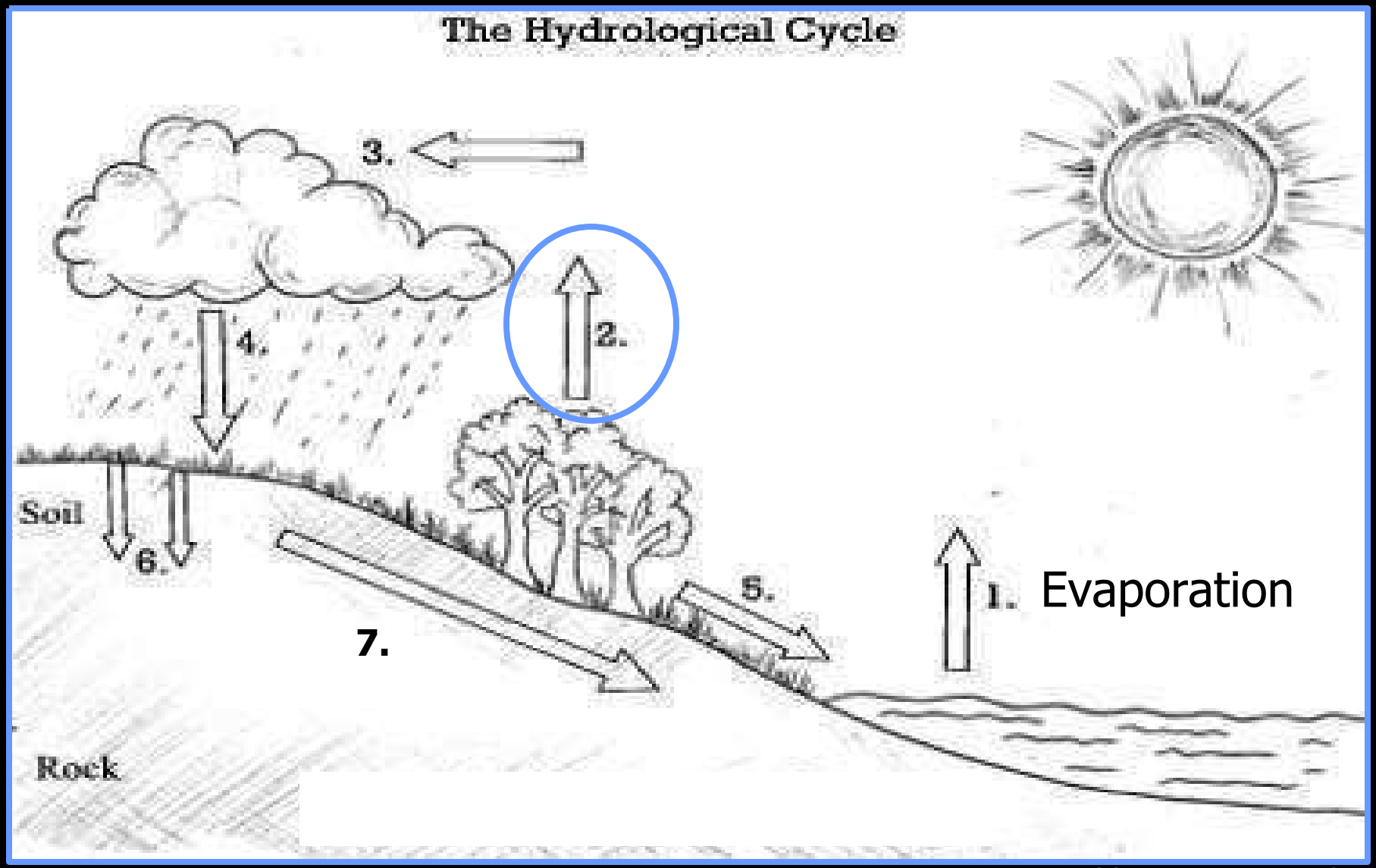

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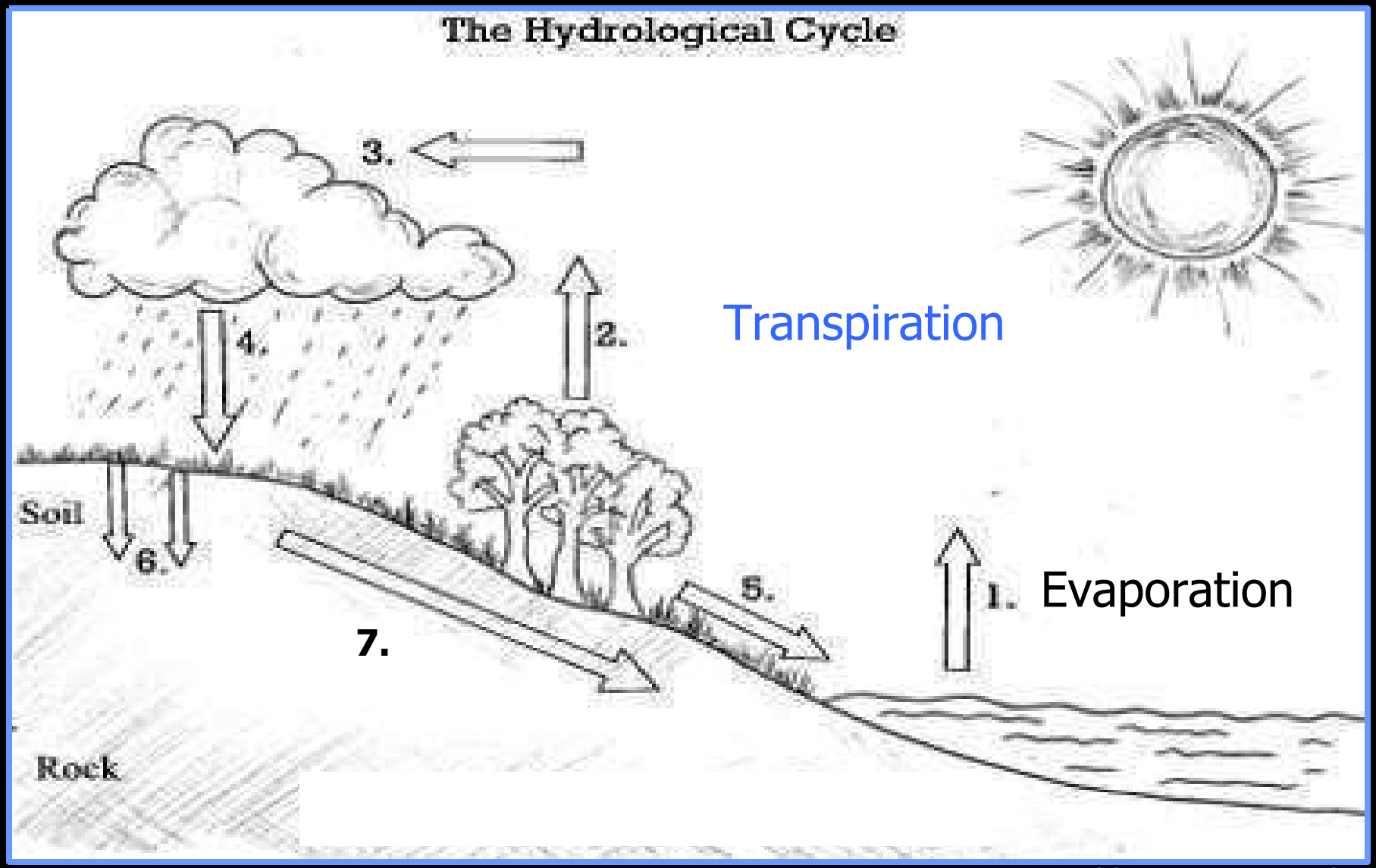

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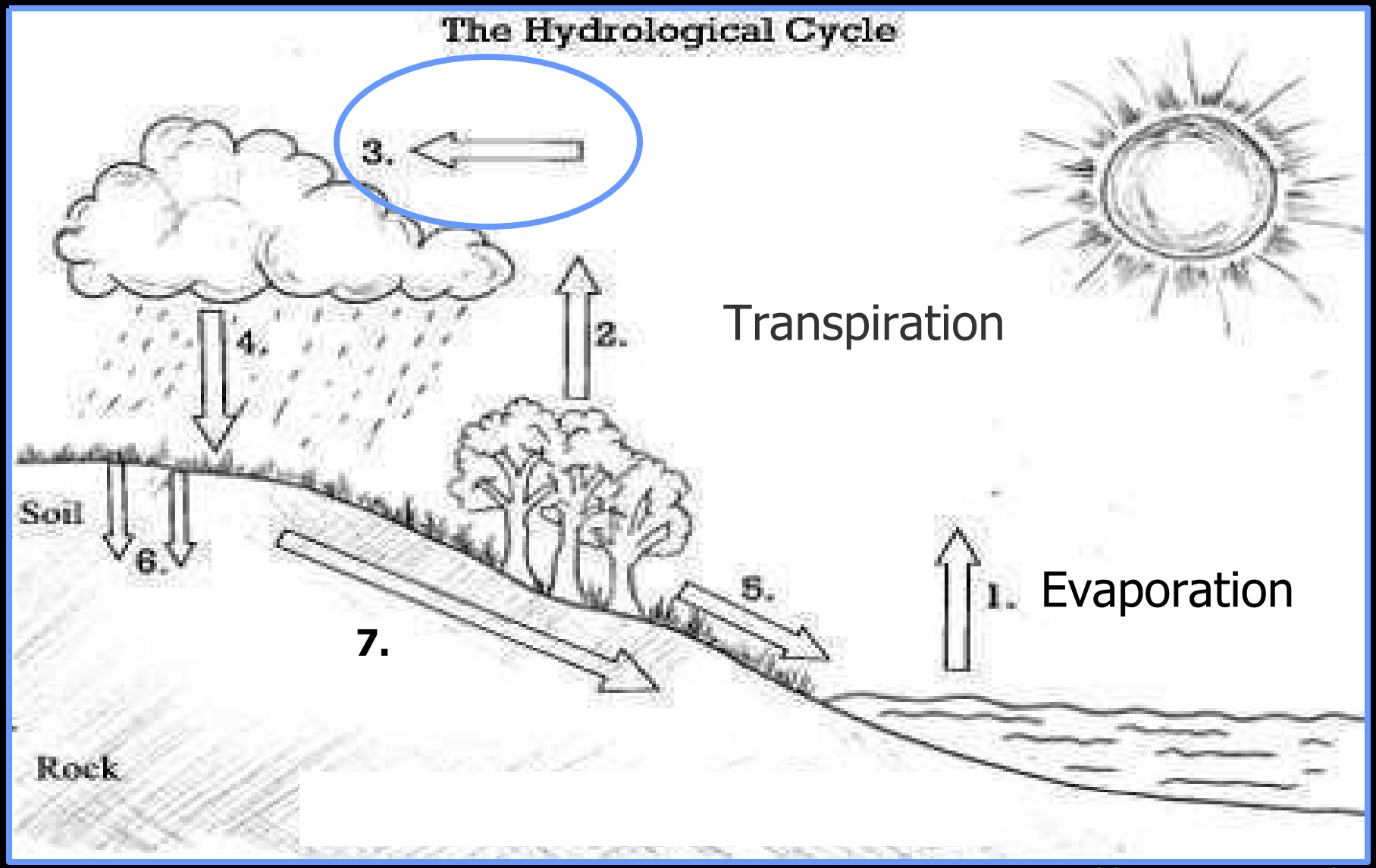

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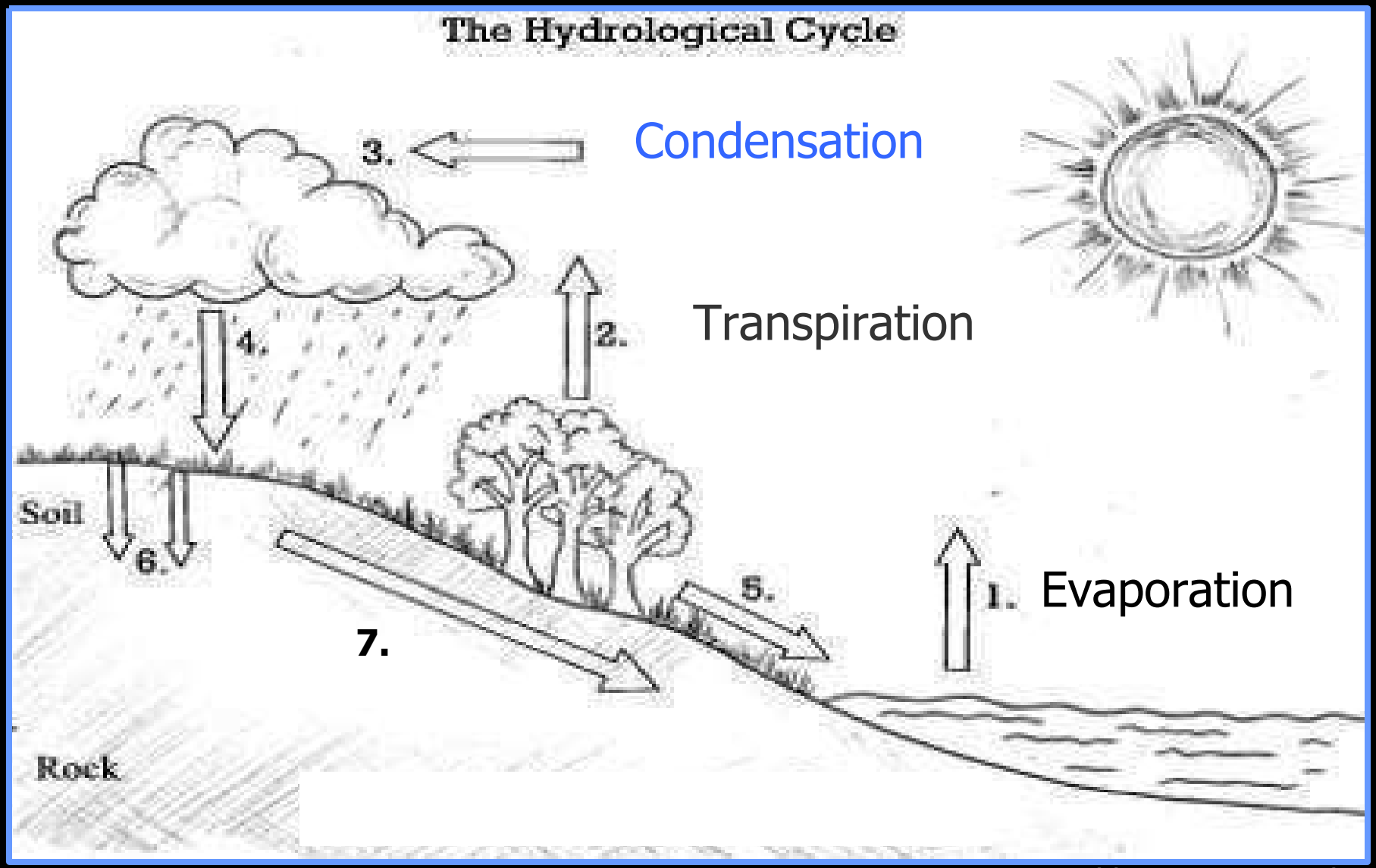

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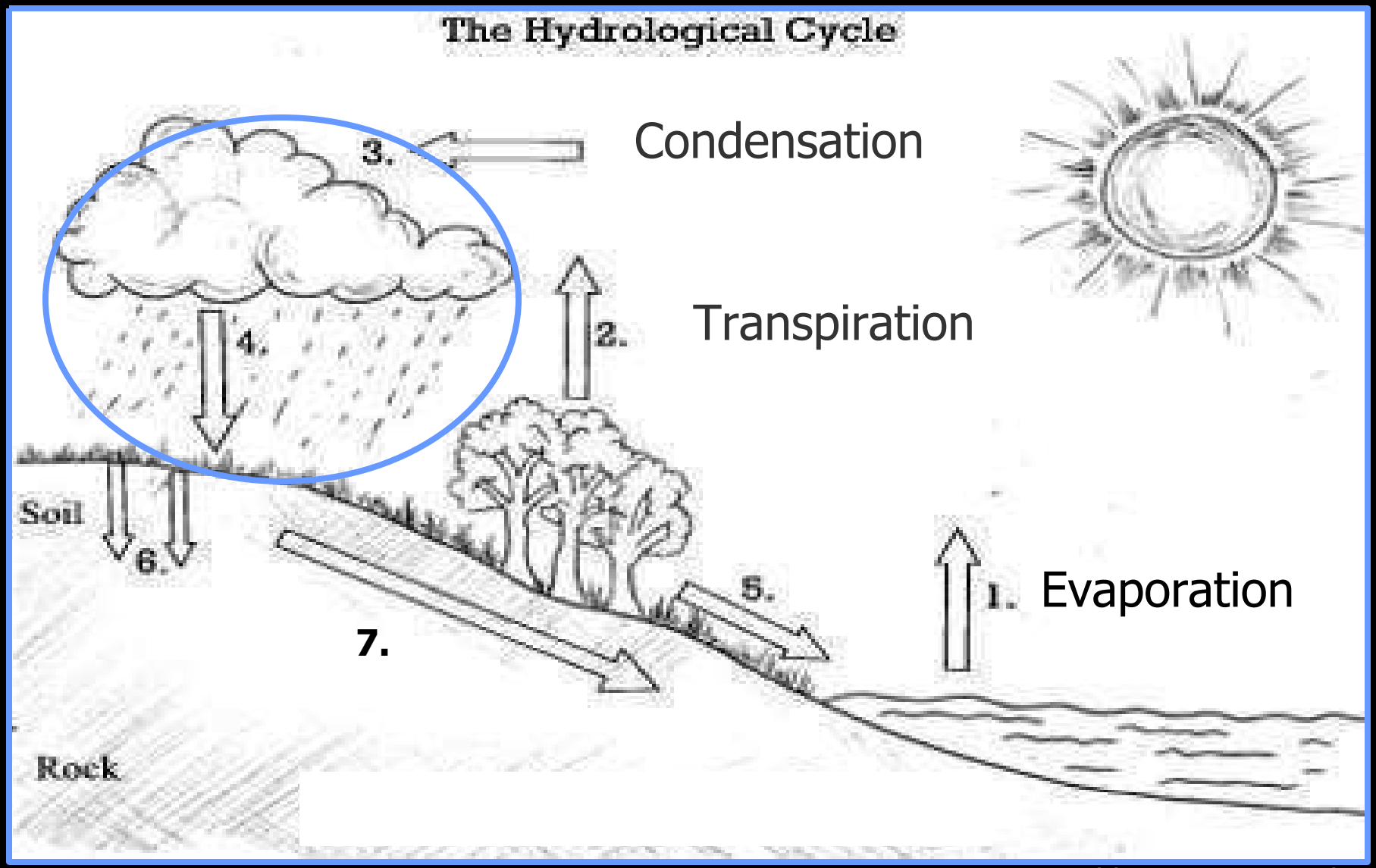

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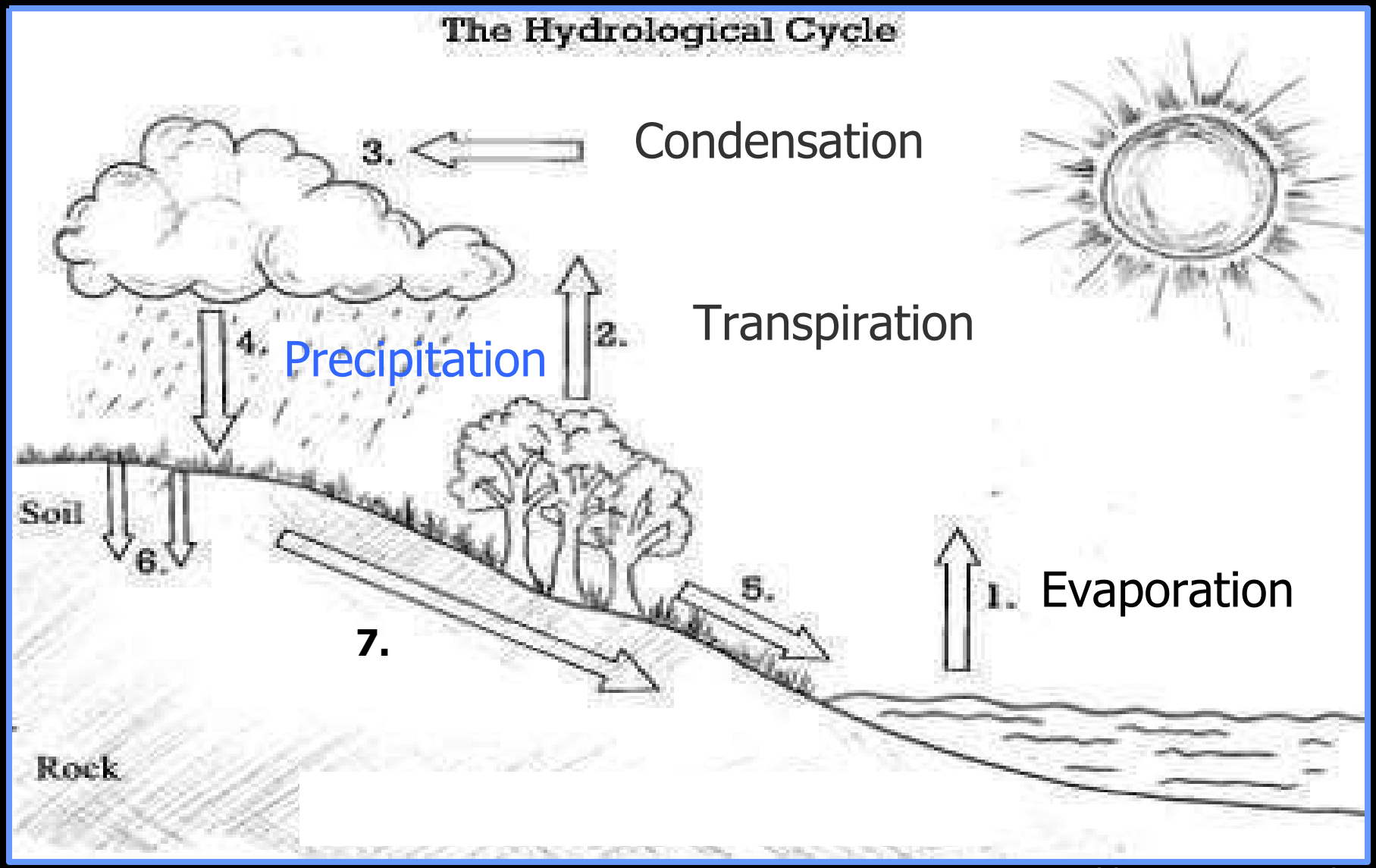

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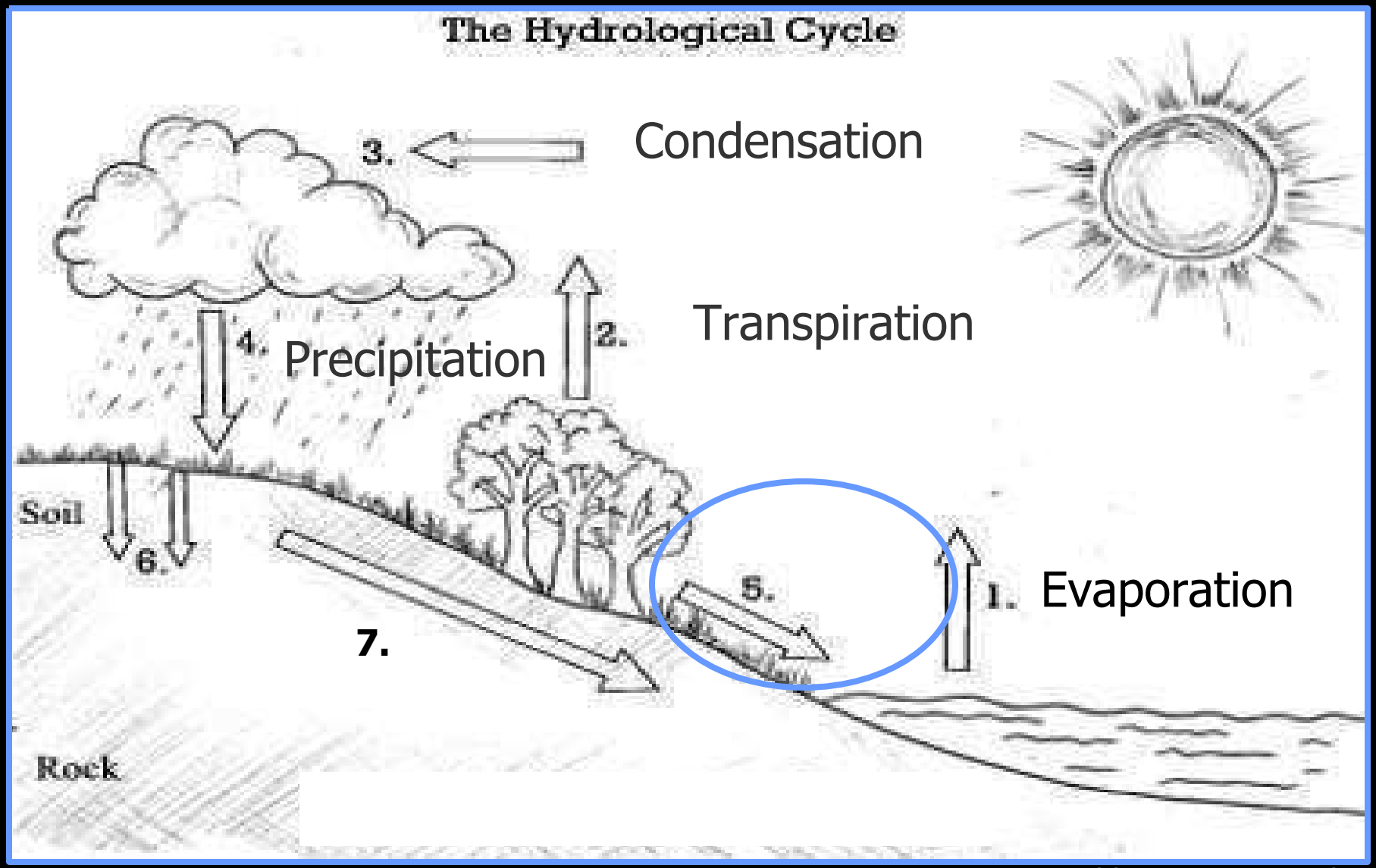

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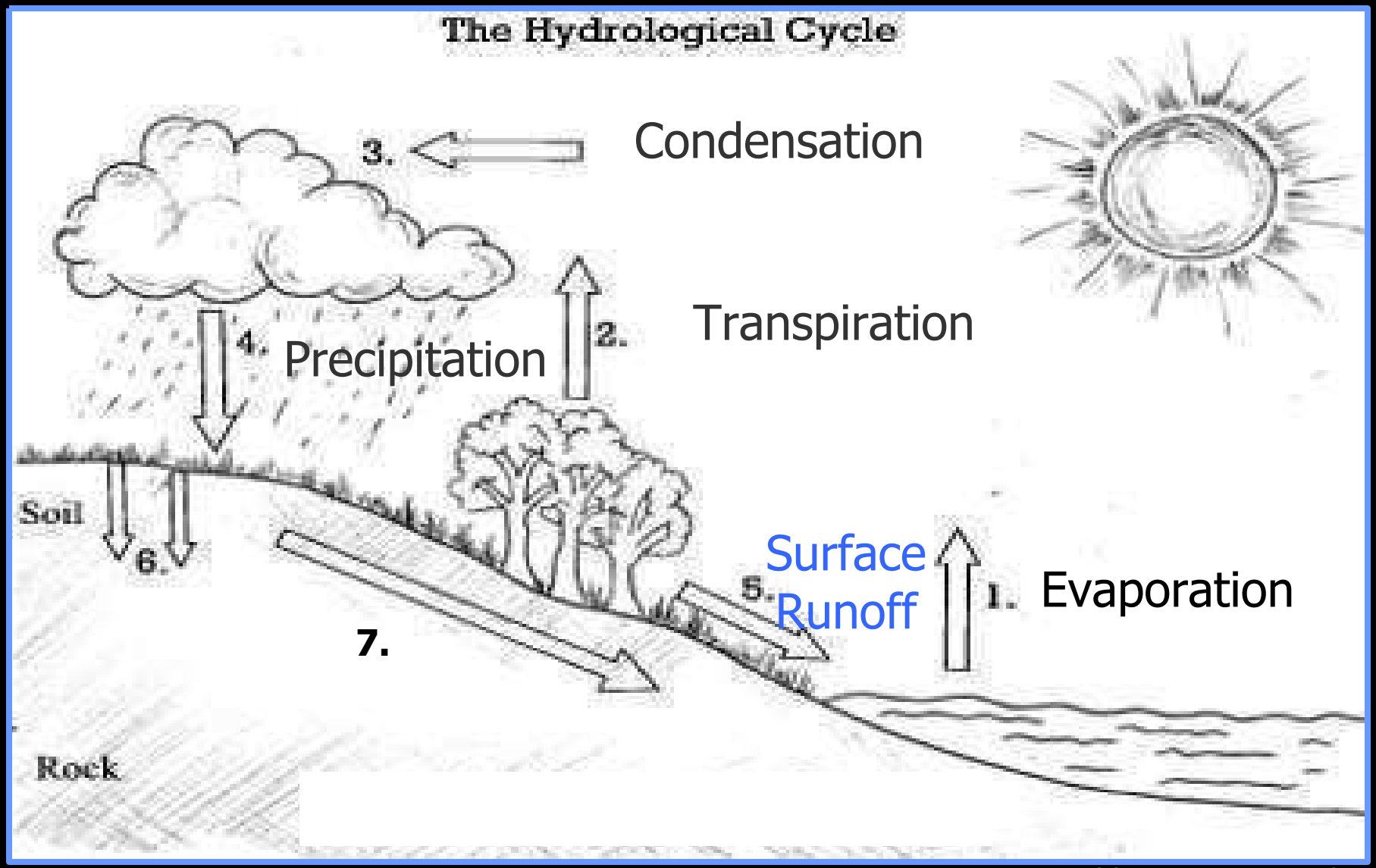

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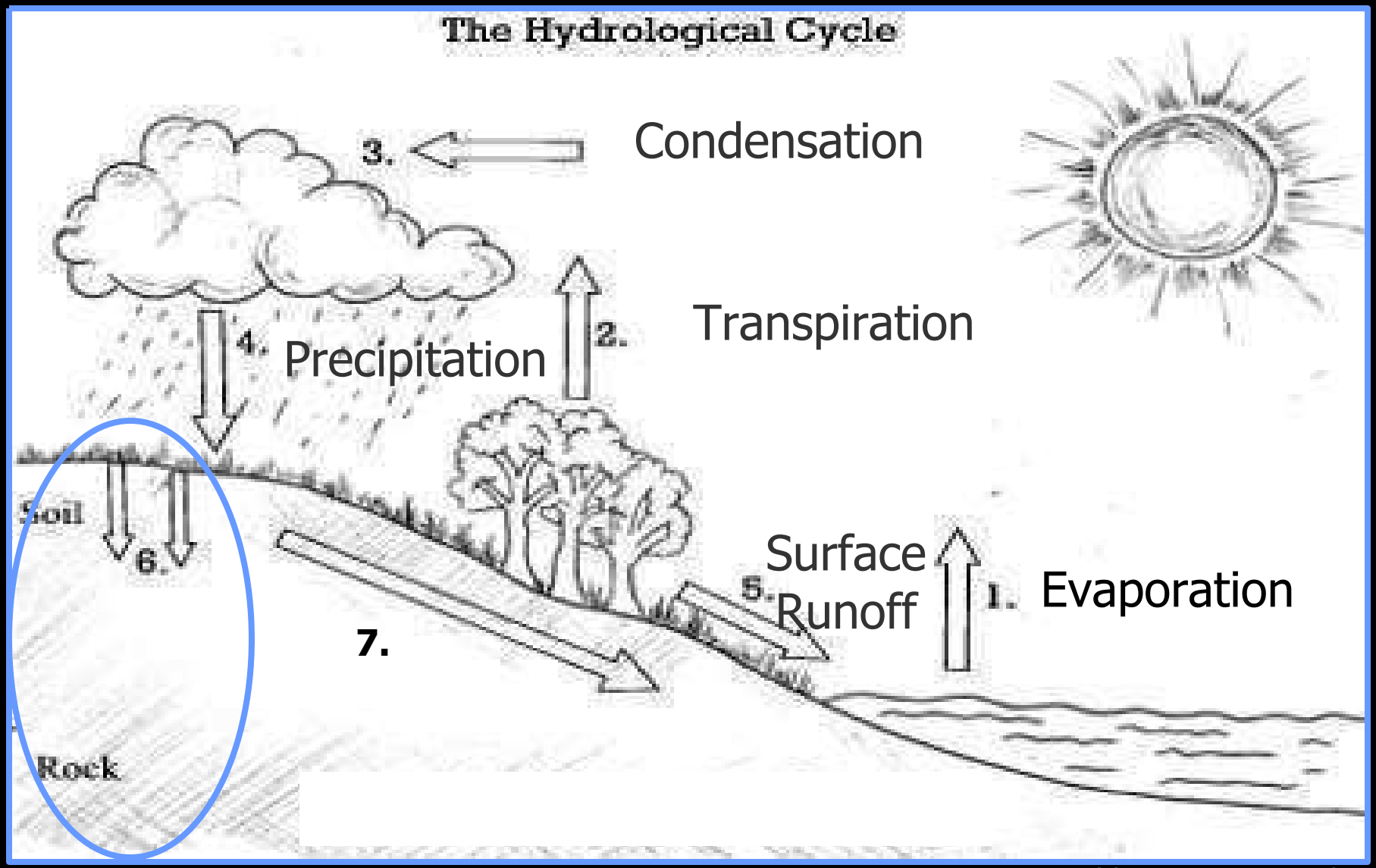

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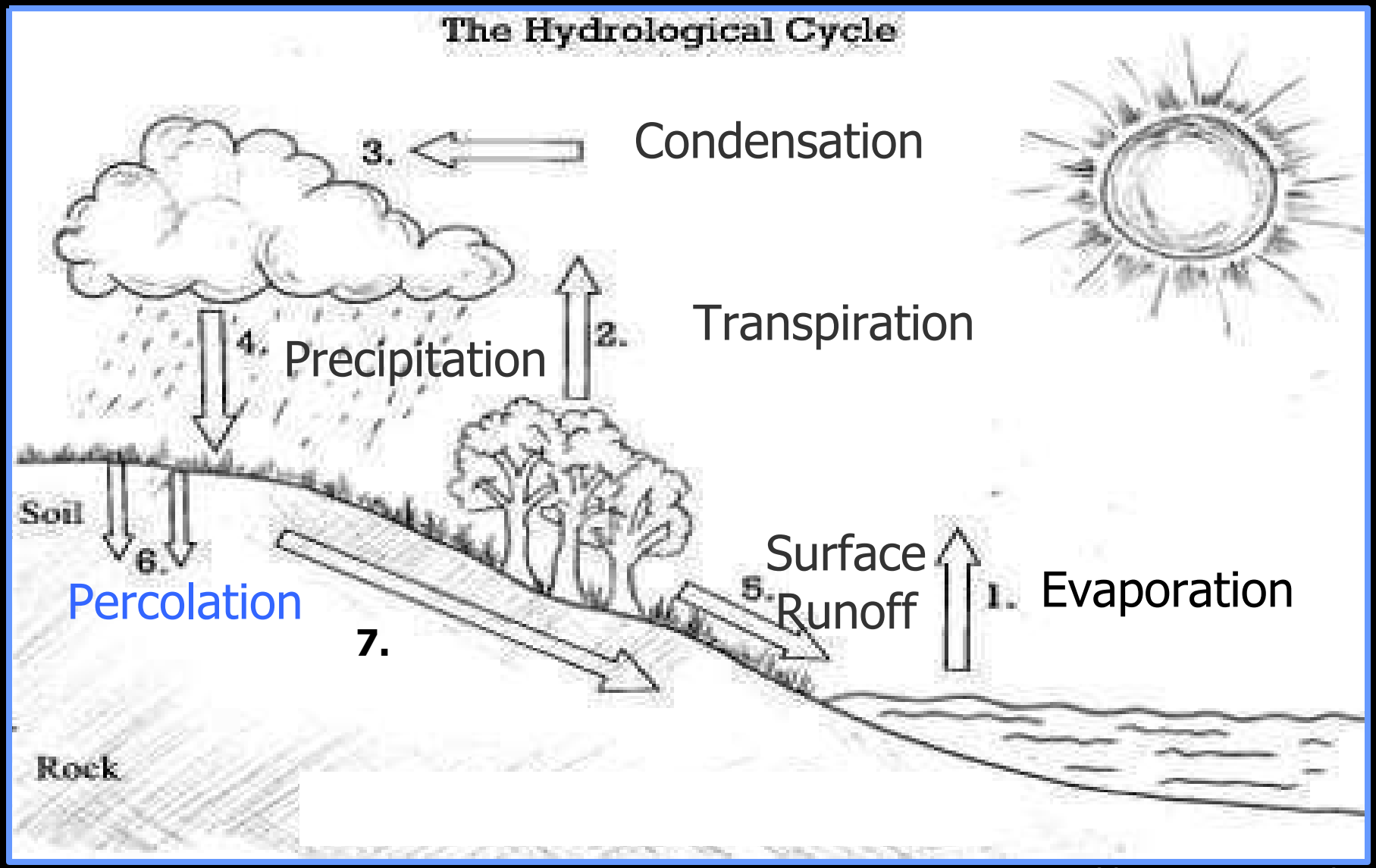

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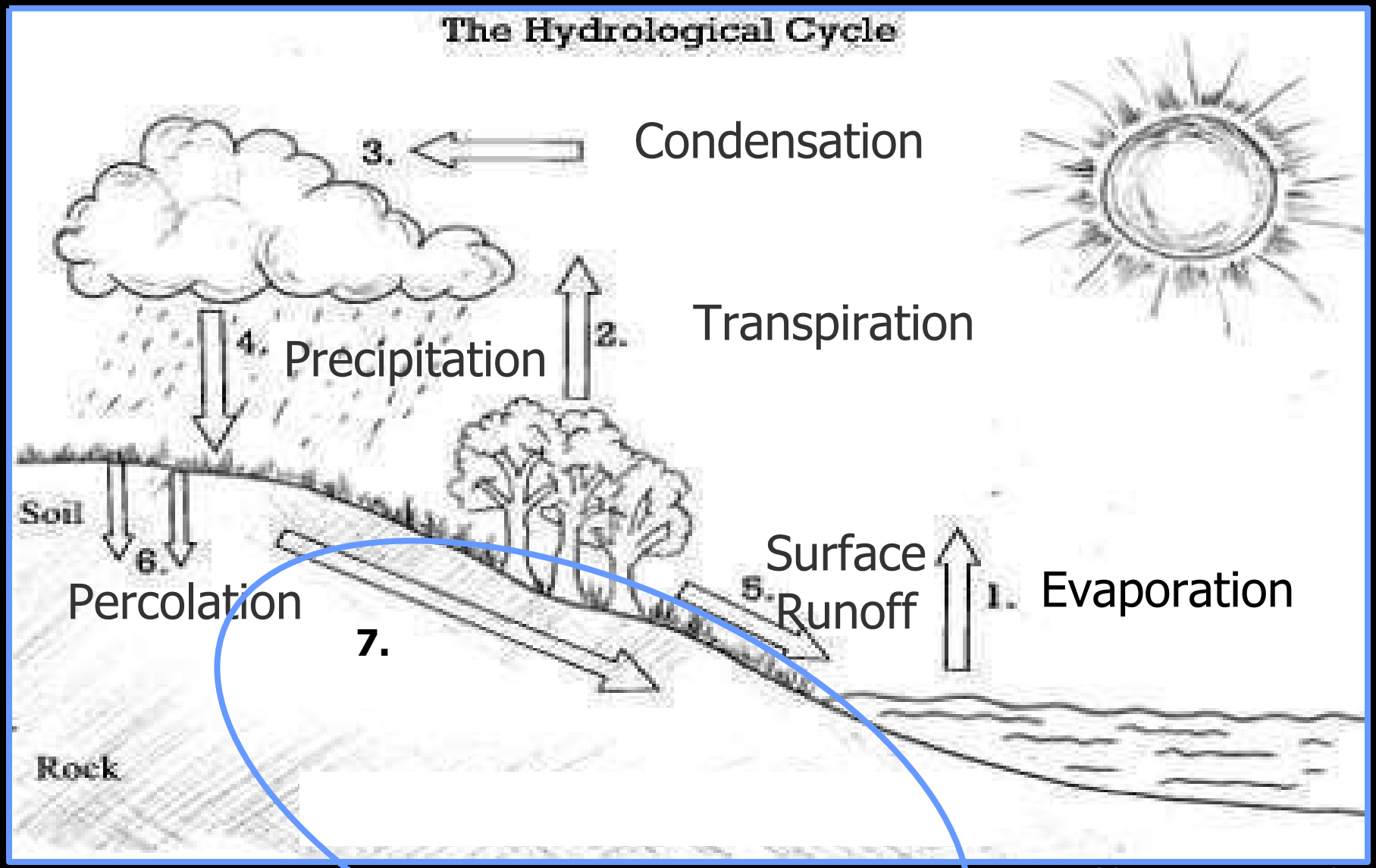

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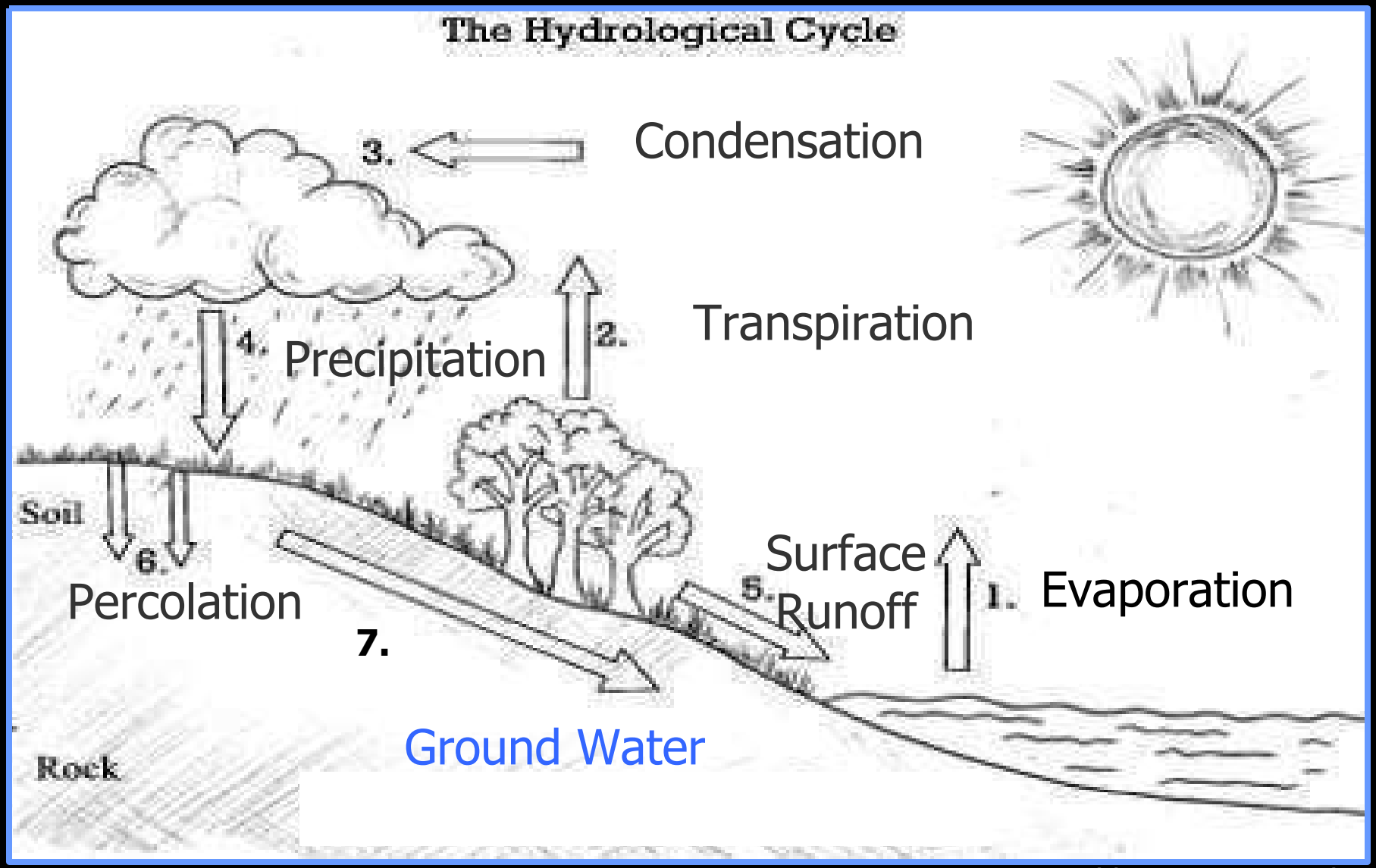

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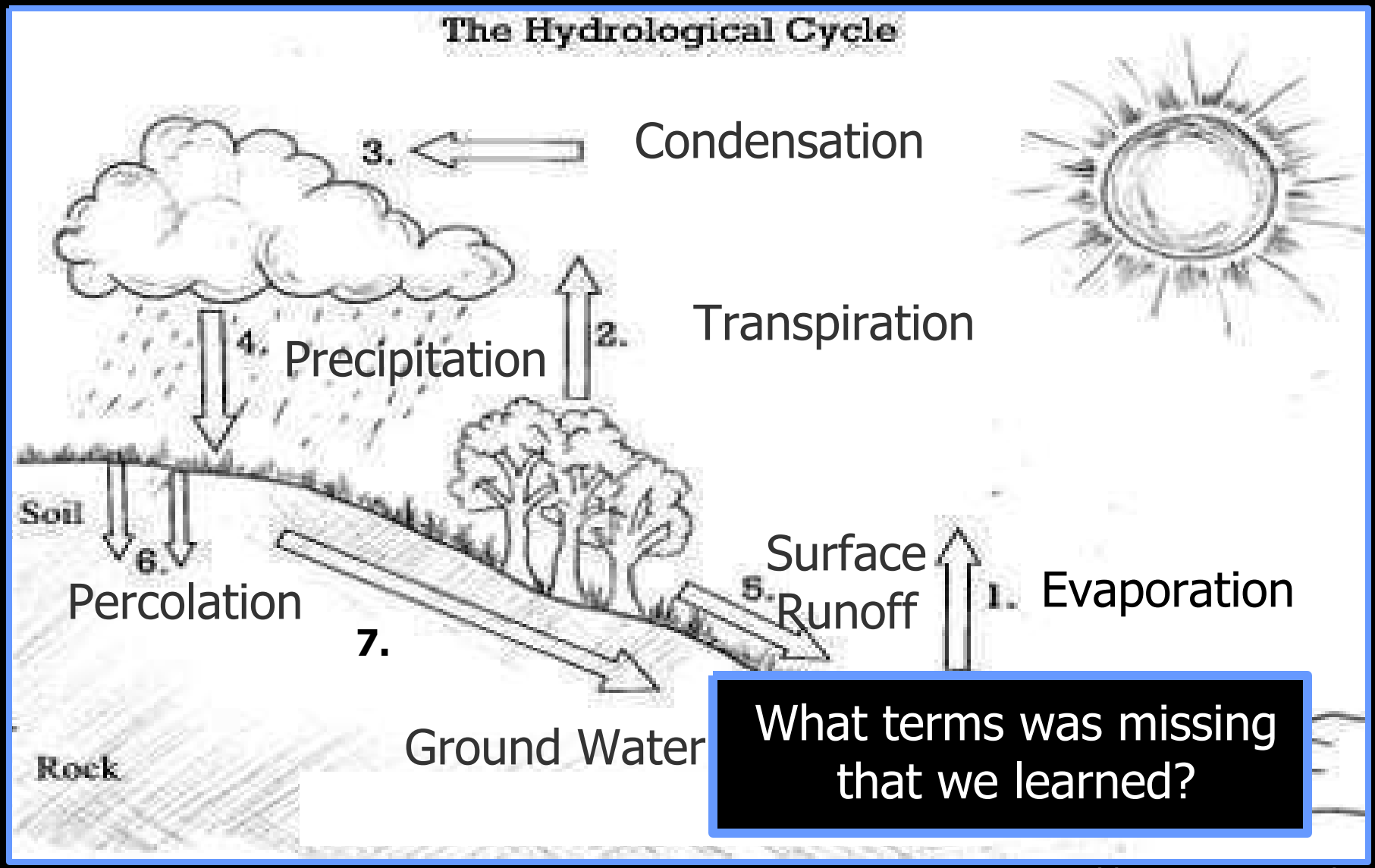

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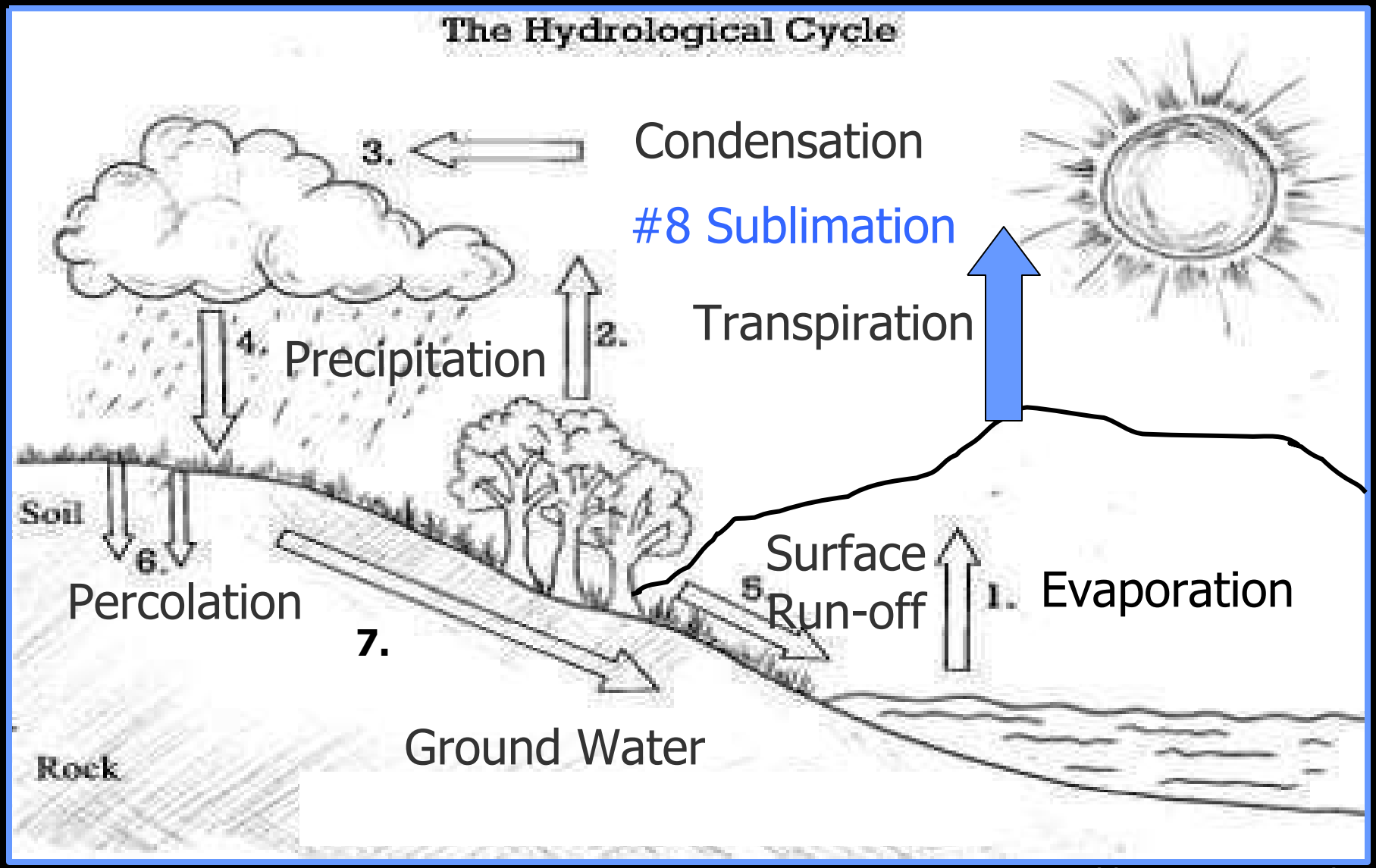
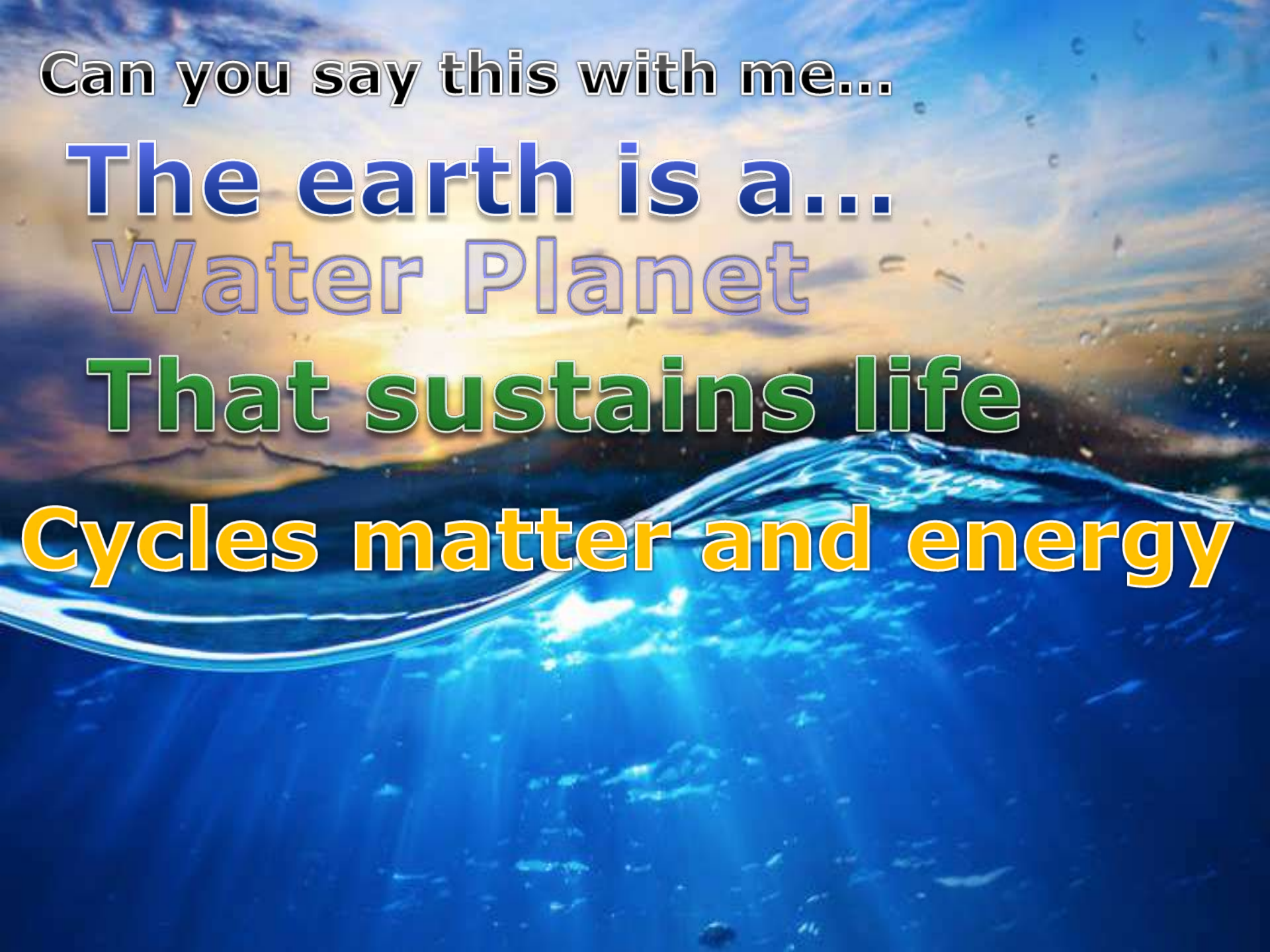


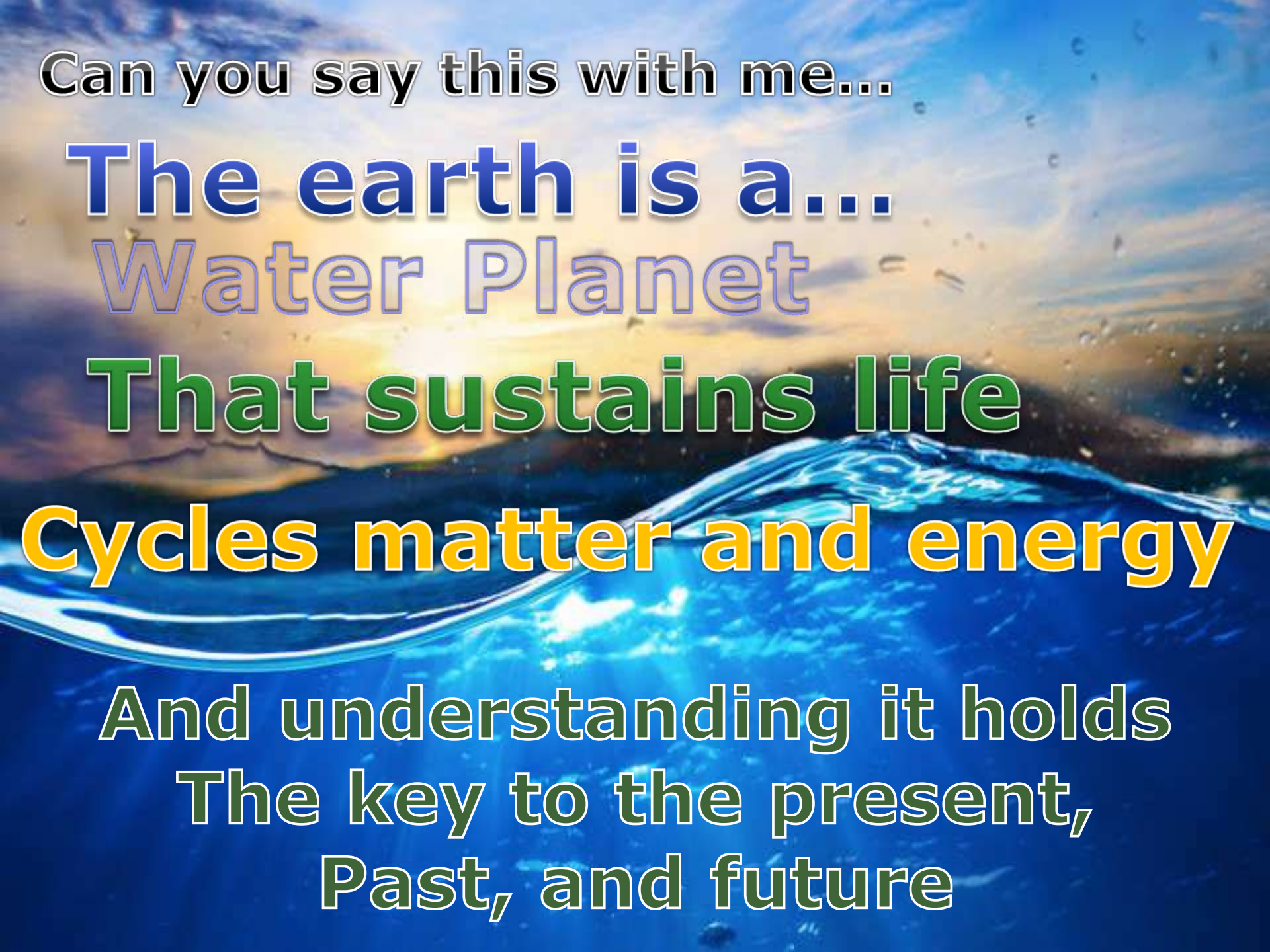

Can you say this with me...

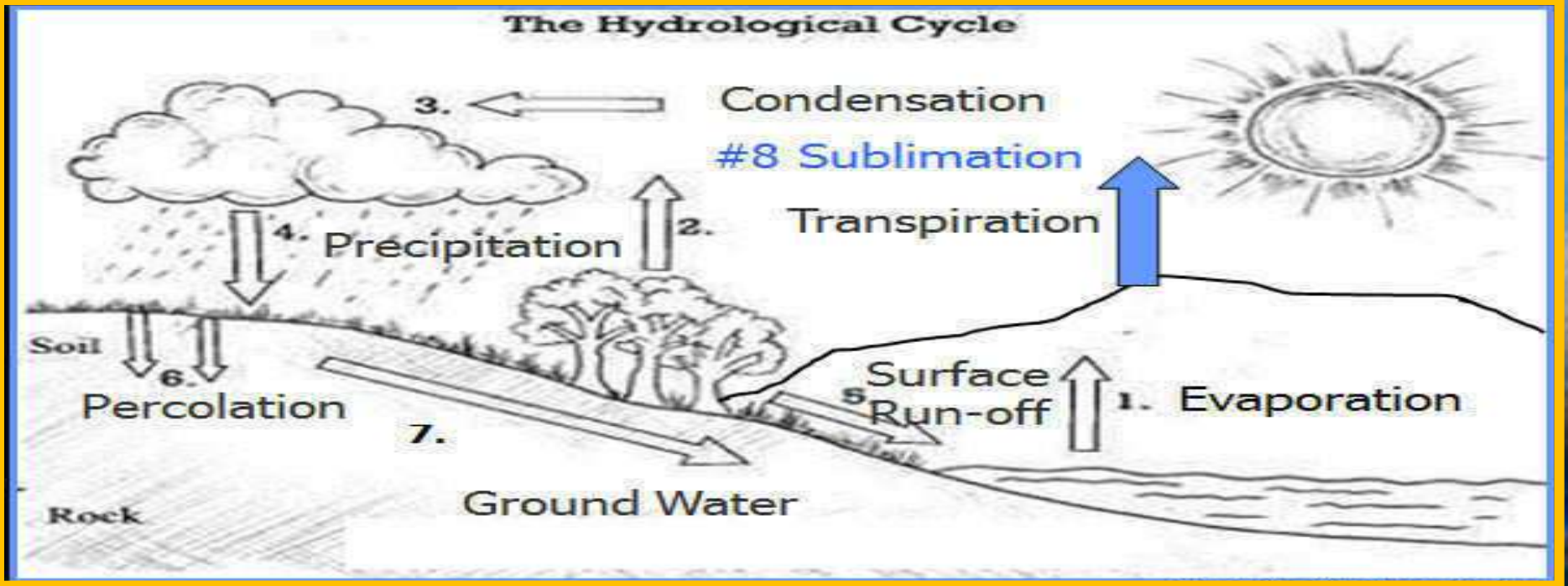

Can you say this with me…
The earth is a…


Can you say this with me...
The earth is a...
Water Planet


Can you say this with me...
The earth is a...
Water Planet
That sustains life


Can you say this with me...
The earth is a...
Water Planet
That sustains life
Cycles matter and energy


Can you say this with me...
The earth is a...
Water Planet
That sustains life
Cycles matter and energy
And understanding it holds
The key to the present,
Past, and future



Cycles matter and energy

And understanding it holds
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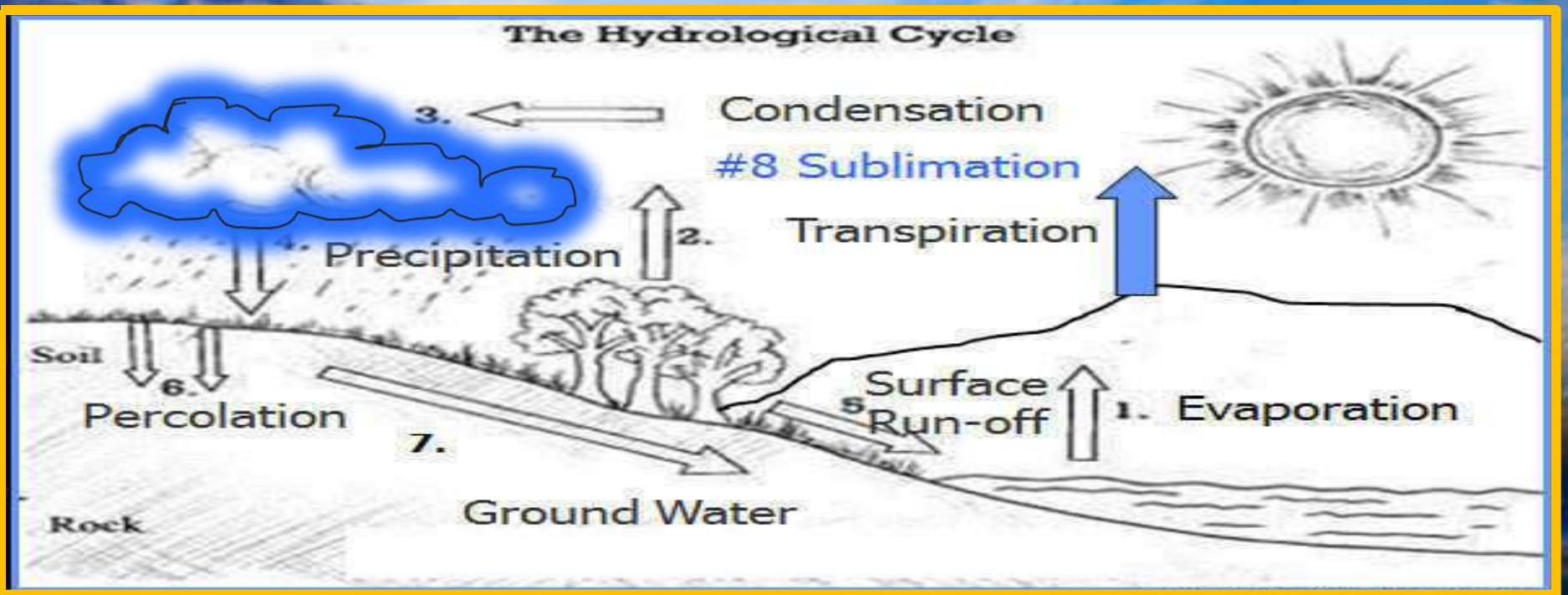


Cycles matter and energy

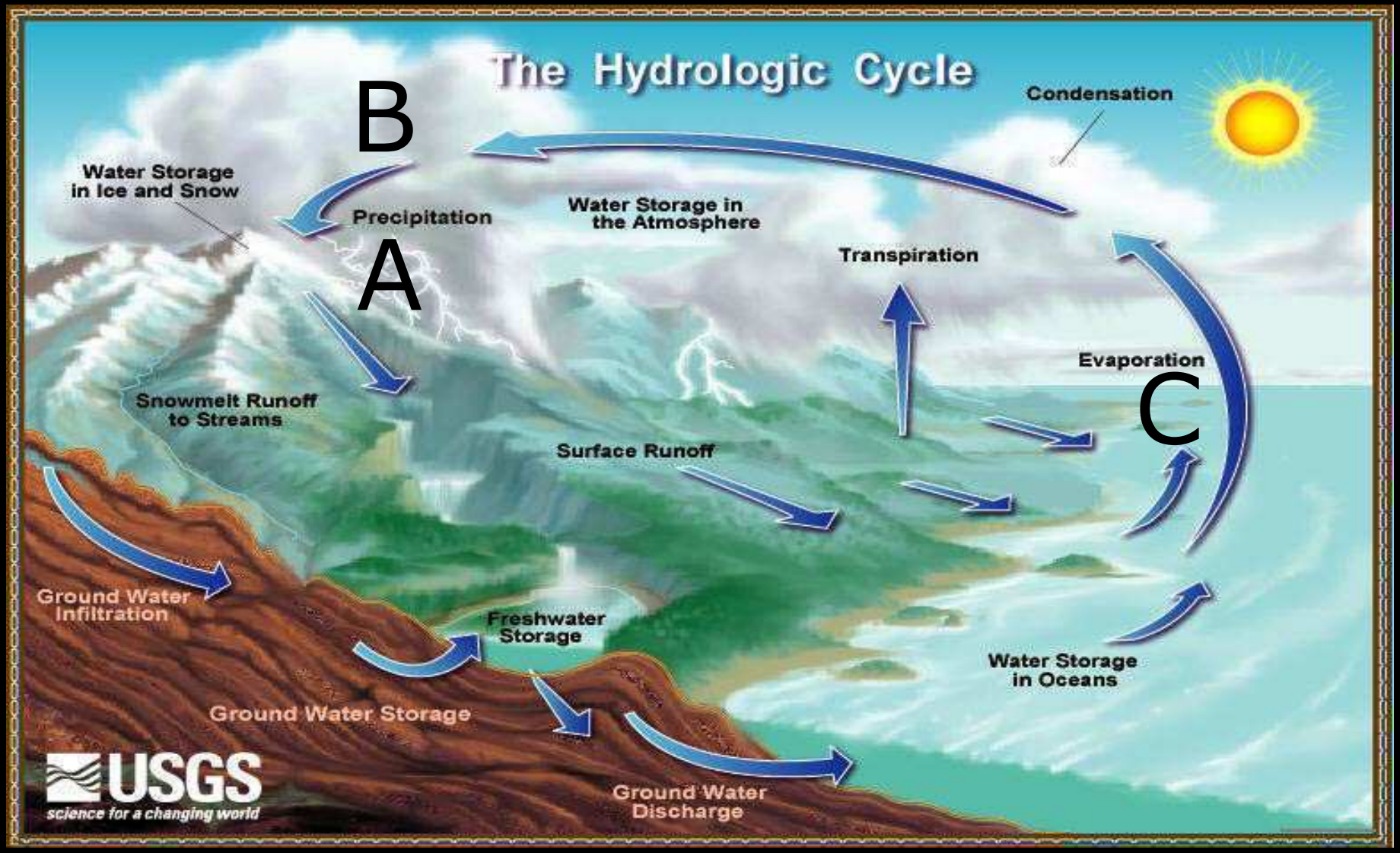
And understanding it holds
The key to the present,
Past, and future

- New Area of Focus: Clouds

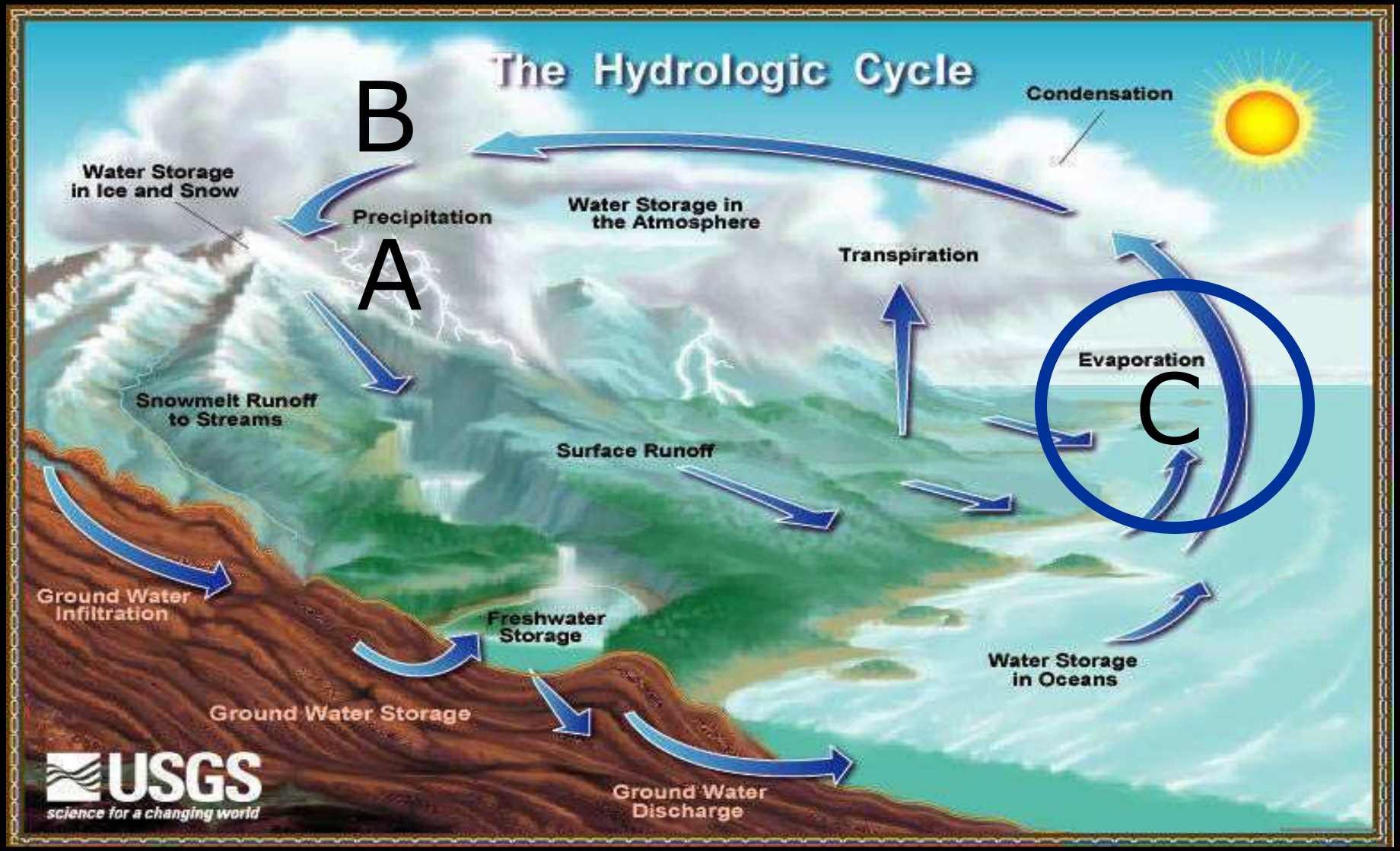
- Cloud: A visible body of very fine water droplets or ice particles suspended in the atmosphere at different altitudes.

- How are clouds made?

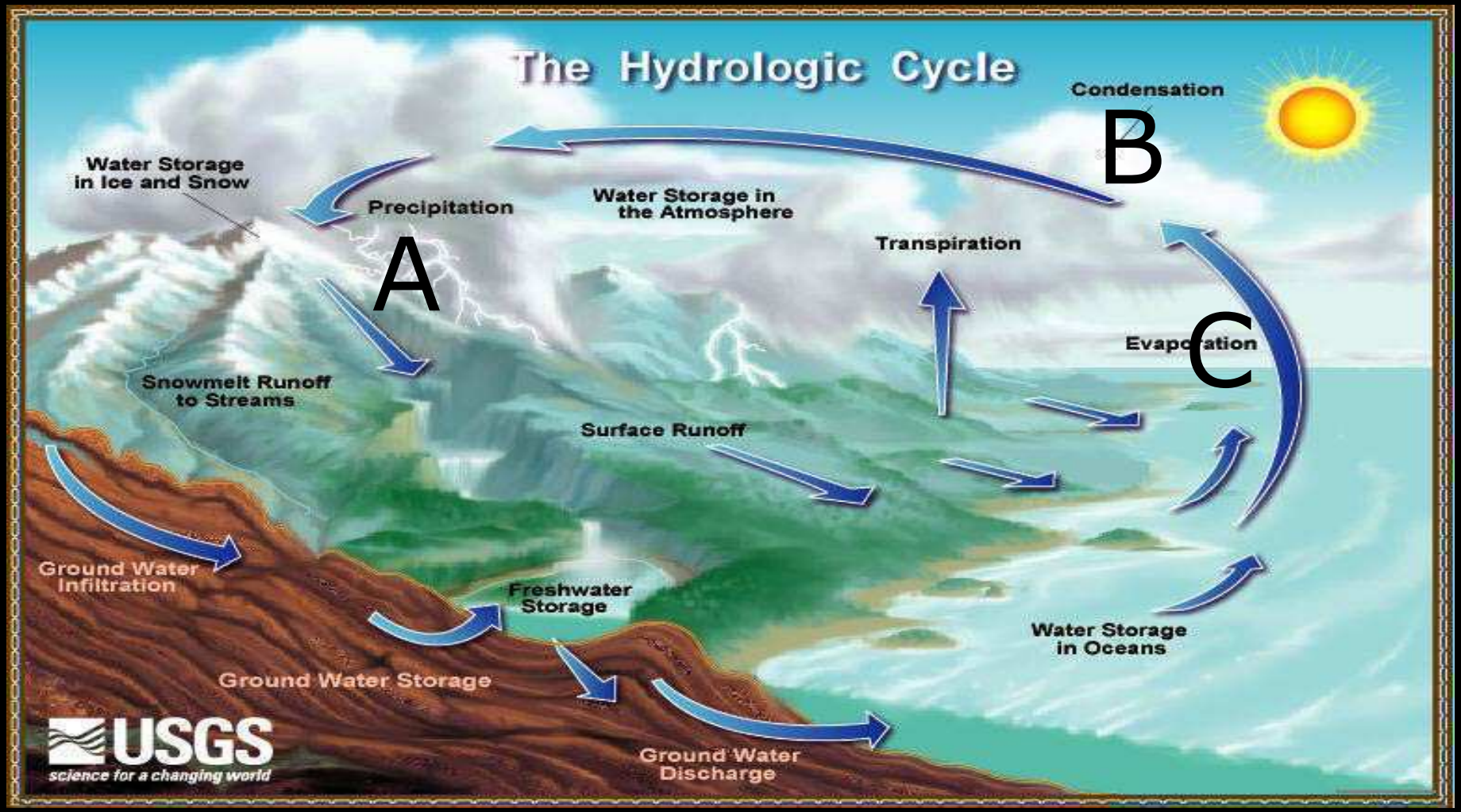
- Which letter best represents water vapor in the air before cloud formation.



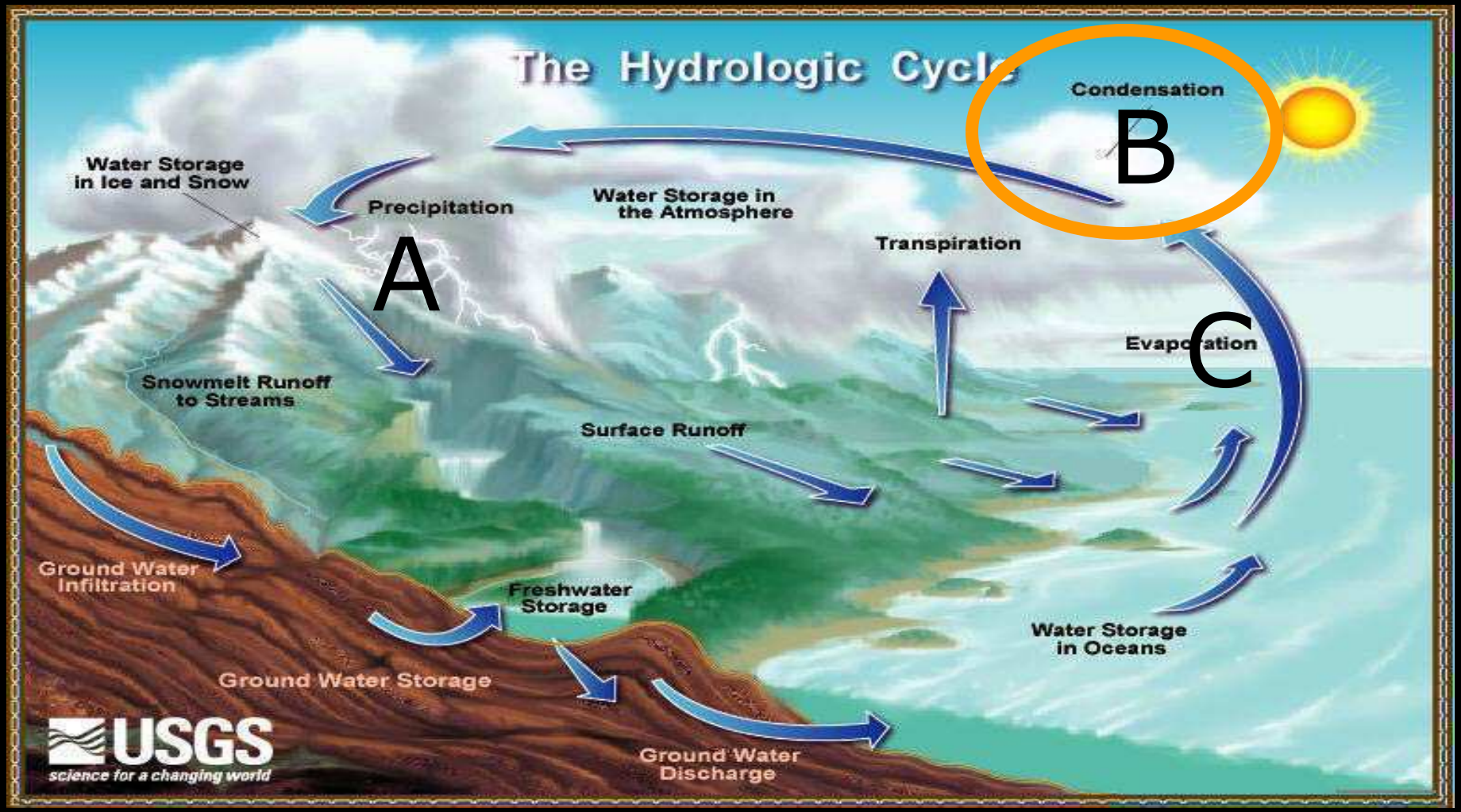
- Answer! “C” Water vapor rises after evaporation and transpiration into the air.



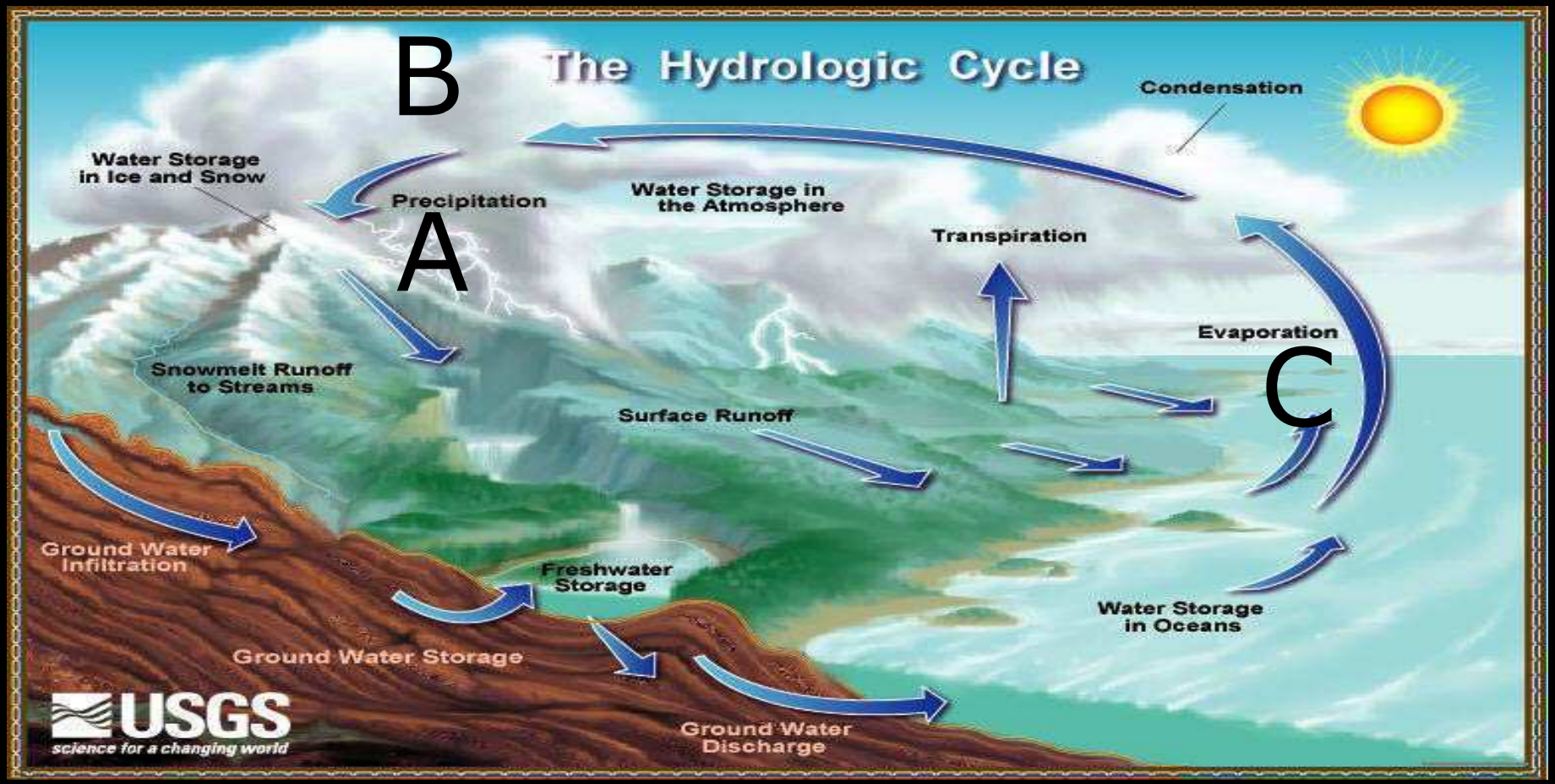
- Which letter best represents water droplets clumping together as temperatures and air pressures drop.



- Answer! “B” Clouds form as the water vapor cools and clumps together around a condensation nuclei.



- Which letter represents when the droplets are too heavy to float in the air they fall to the ground in the form of rain or snow called, precipitation.



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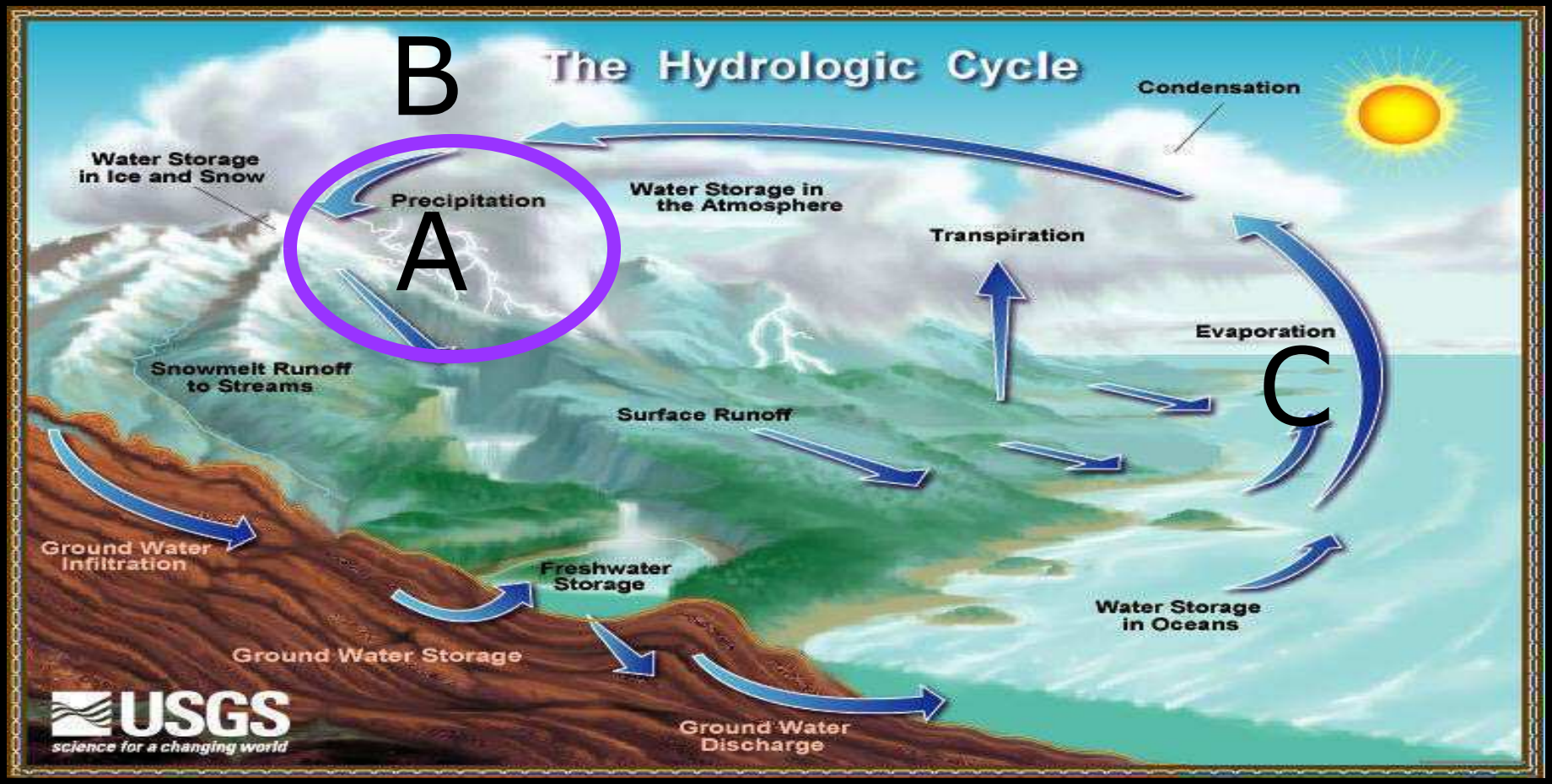
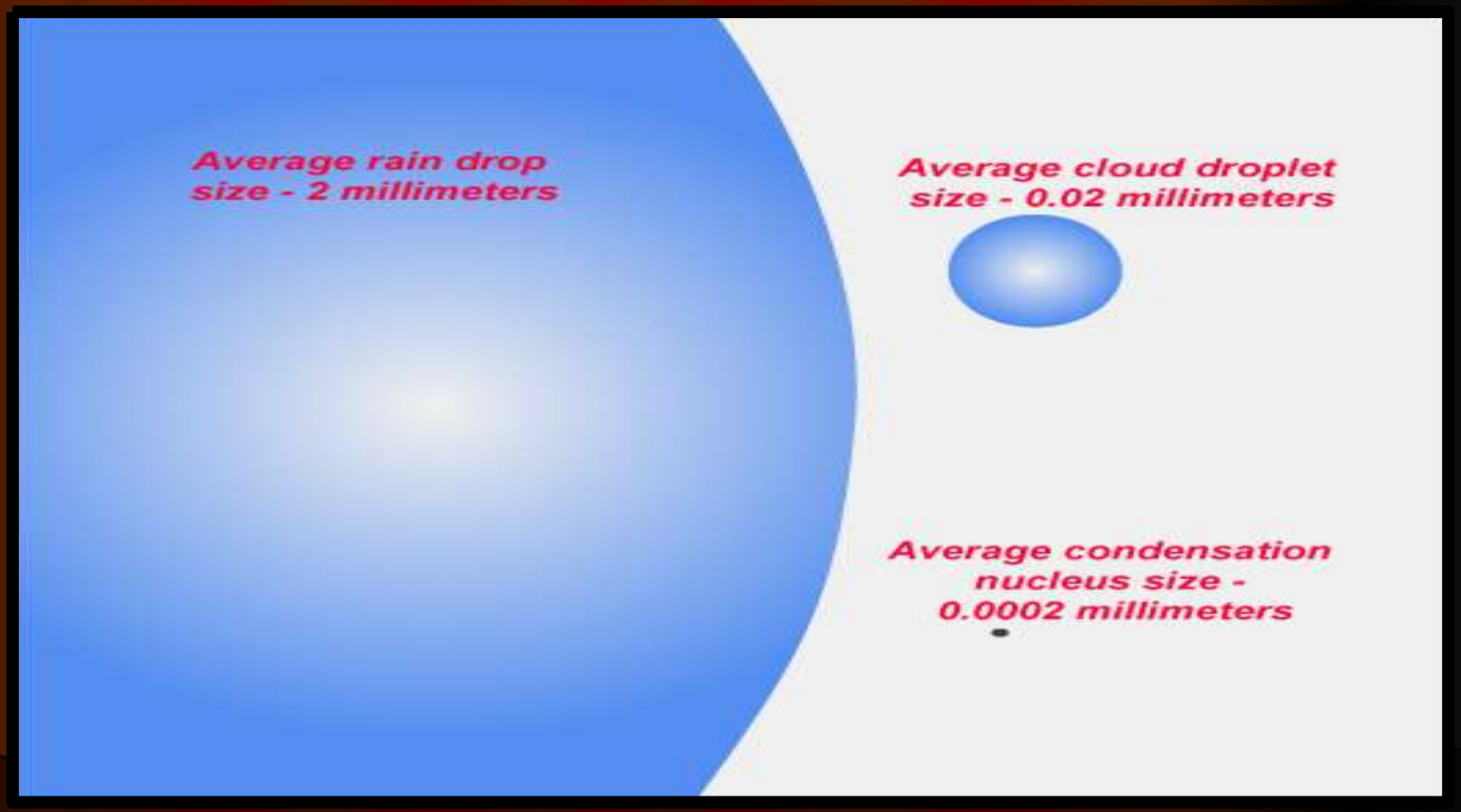
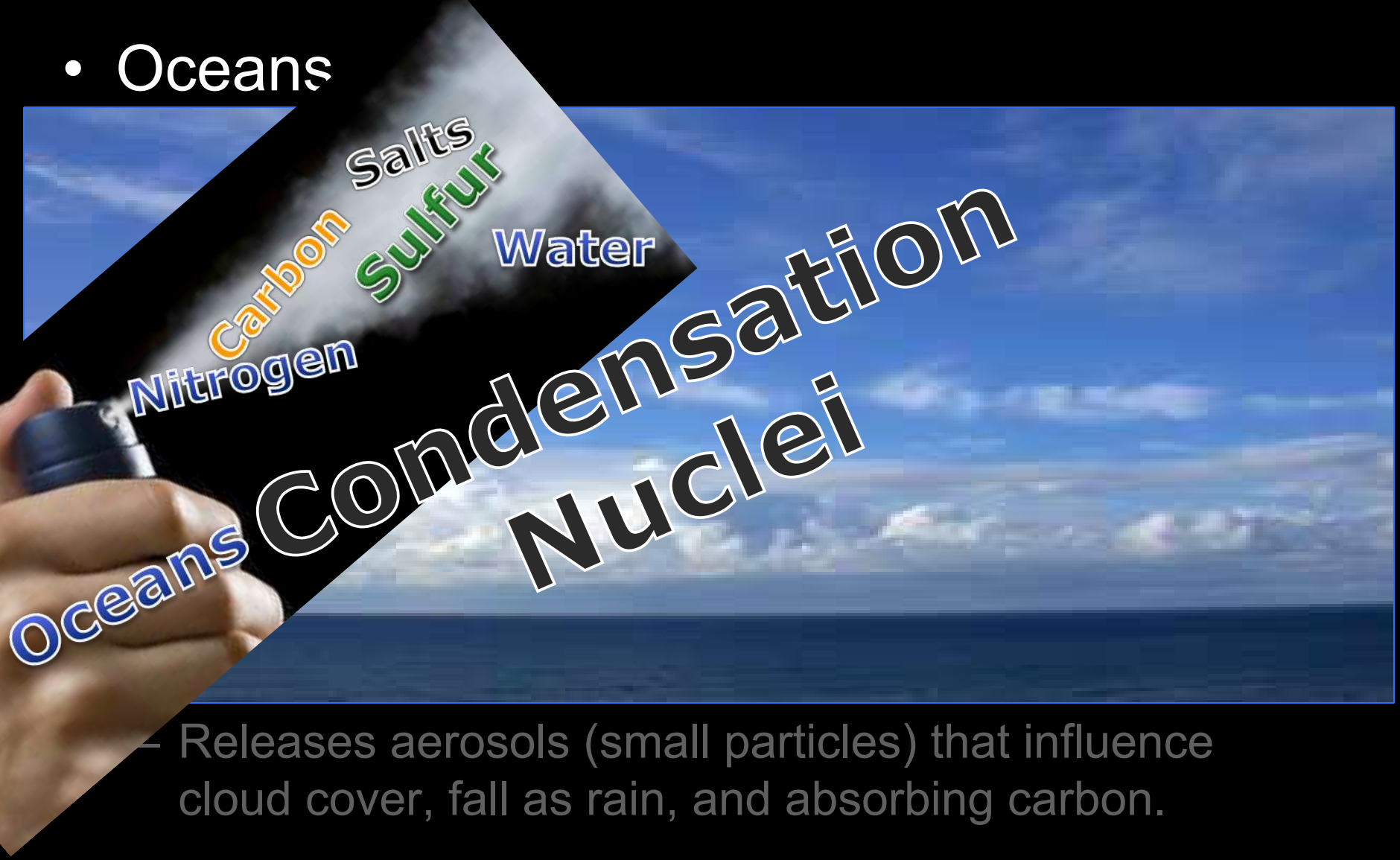


- Clouds
  - Water molecules attach to a condensation nuclei.



- Oceans

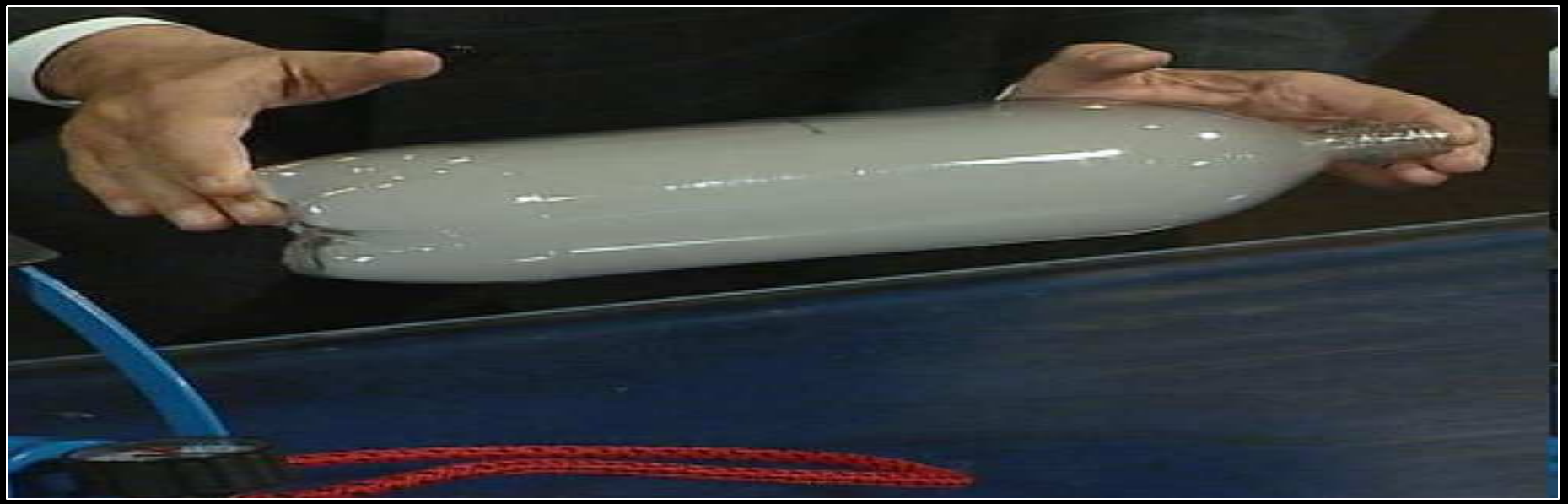


  - Releases aerosols (small particles) that influence cloud cover, fall as rain, and absorbing carbon.

- Activity! Making a cloud

- Activity! (Demonstration) Cloud in a bottle
  - Pour just enough warm water in the bottle to cover the bottom of the container.
  - Light the match and place the match head inside the bottle.
  - Allow the bottle to fill with smoke.
  - Cap the bottle.
  - Squeeze the bottle really hard a few times. When you release the bottle, you should see the cloud form. It may disappear between 'squeezes'.

- Answer! Cloud in a bottle.
  - Squeezing the bottle makes the bottle (slightly) smaller, thus forcing the air particles to get closer together and thus increases (slightly) the air pressure and temperature in the bottle.
  - When you release the bottle the air expands back into its original volume lowering the pressure and temperature in the bottle to the point where the moisture in the air can.
  - Smoke crates condensation nuclei particles.



- Fog: A cloud bank that is in contact with the ground.

- In really dry places, morning fog can be collected. Desert animals take advantage of dew.

- Can you die from the cold in a desert?

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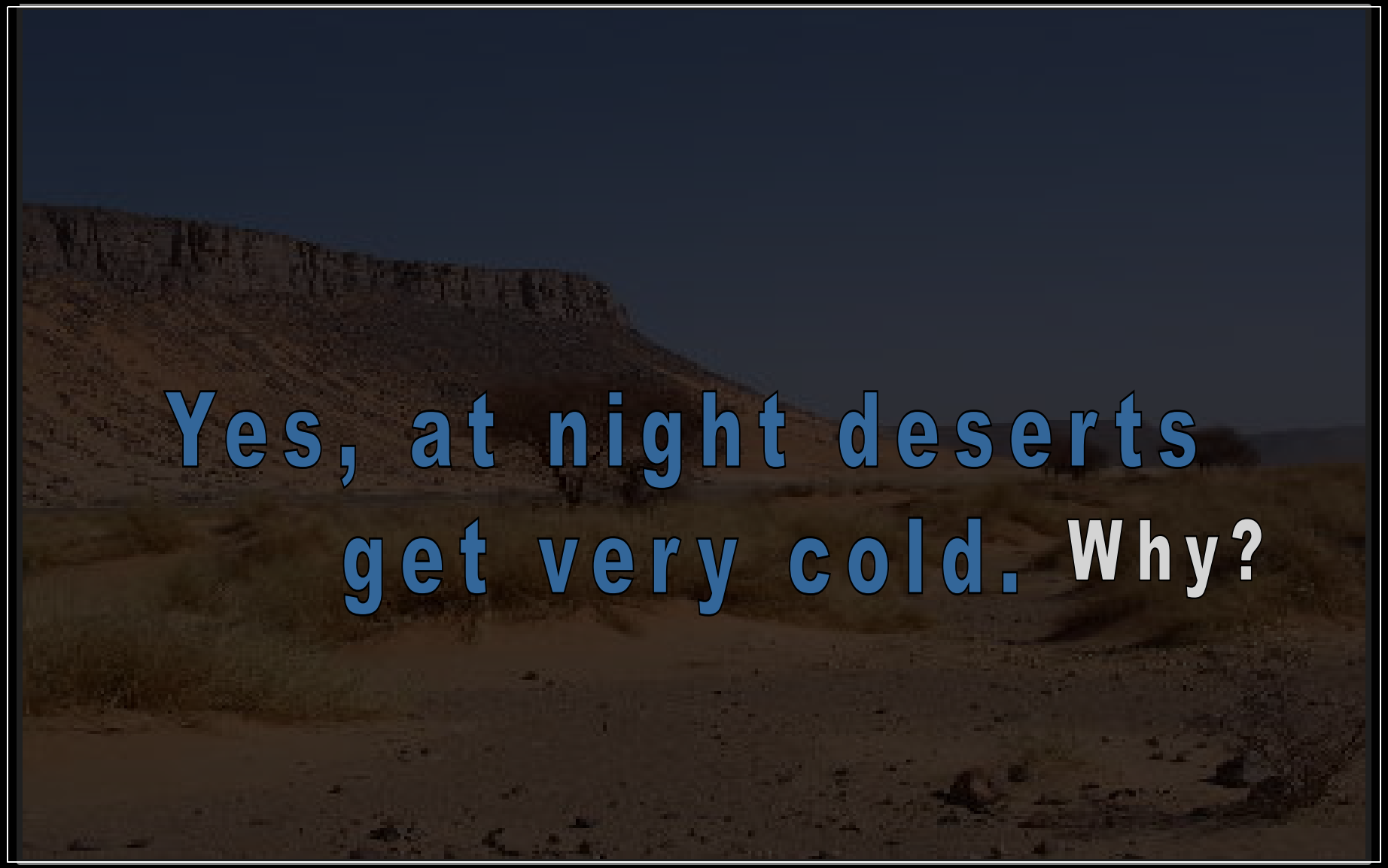
- Can you die from the cold in a desert?

Yes, at night deserts get very cold.

- Can you die from the cold in a desert?

Yes, at night deserts get very cold. Why?

- Can you die from the cold in a desert?



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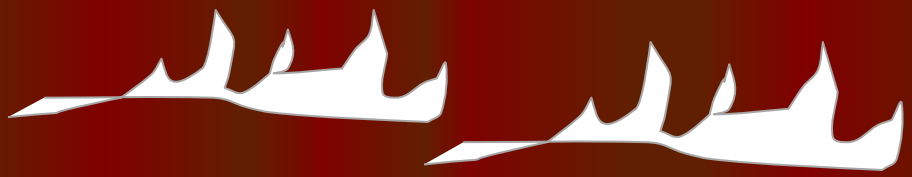
- Clouds help keep the warmer temperatures from rising into the atmosphere. (Insulation)

- Clouds help keep the warmer temperatures from rising into the atmosphere. (Insulation)

- The three main types are
  - -
  - -
  - -

- *Cirrus:* 

- *Cirrus:*
  - *A wispy white cloud (usually of fine ice crystals) at a high altitude.*

- Cumulus:

- Cumulus:
  - Middle elevation, white, puffy, and represents pleasant weather.

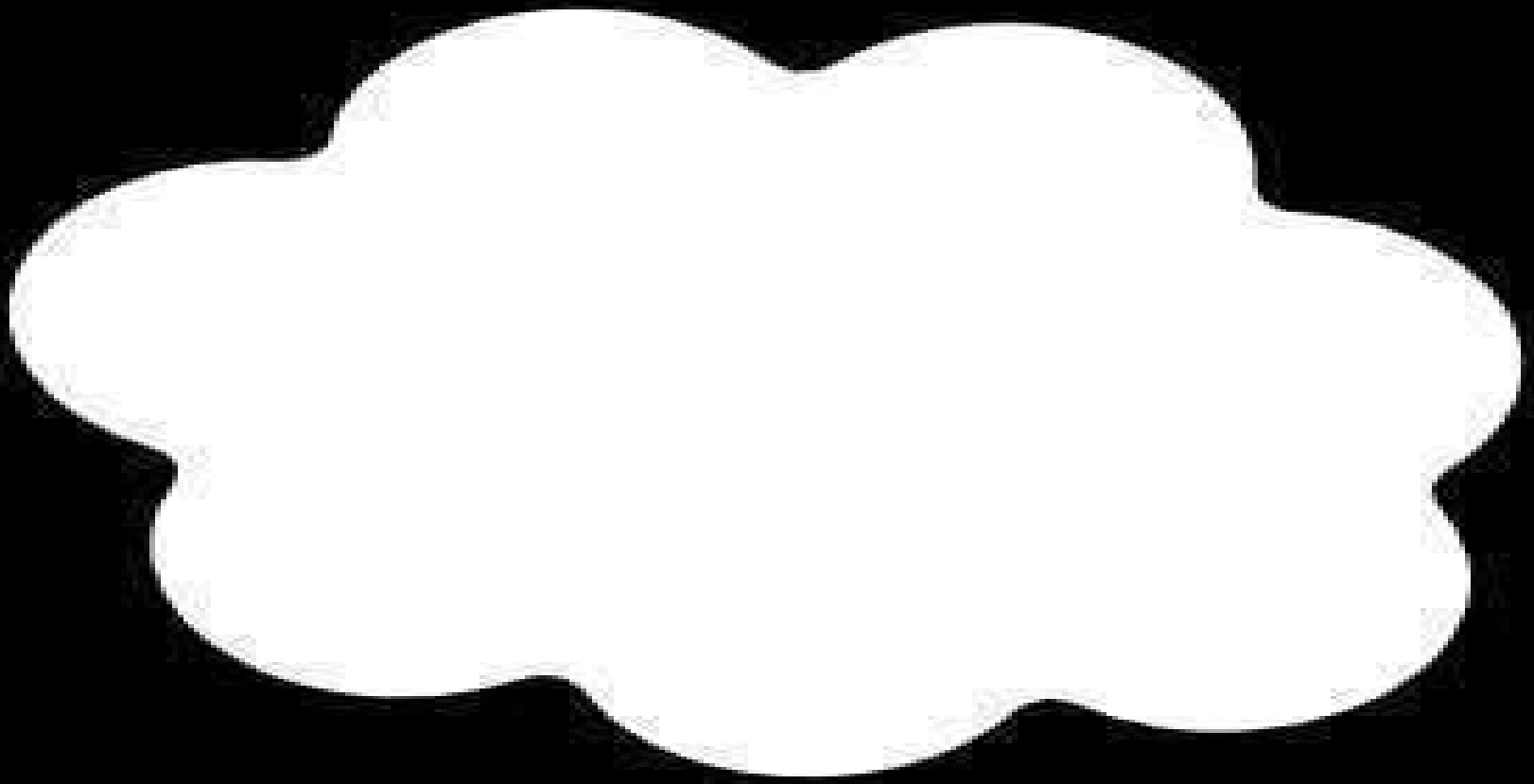
- Stratus

- Stratus
  - Low elevation, gray, precipitation.

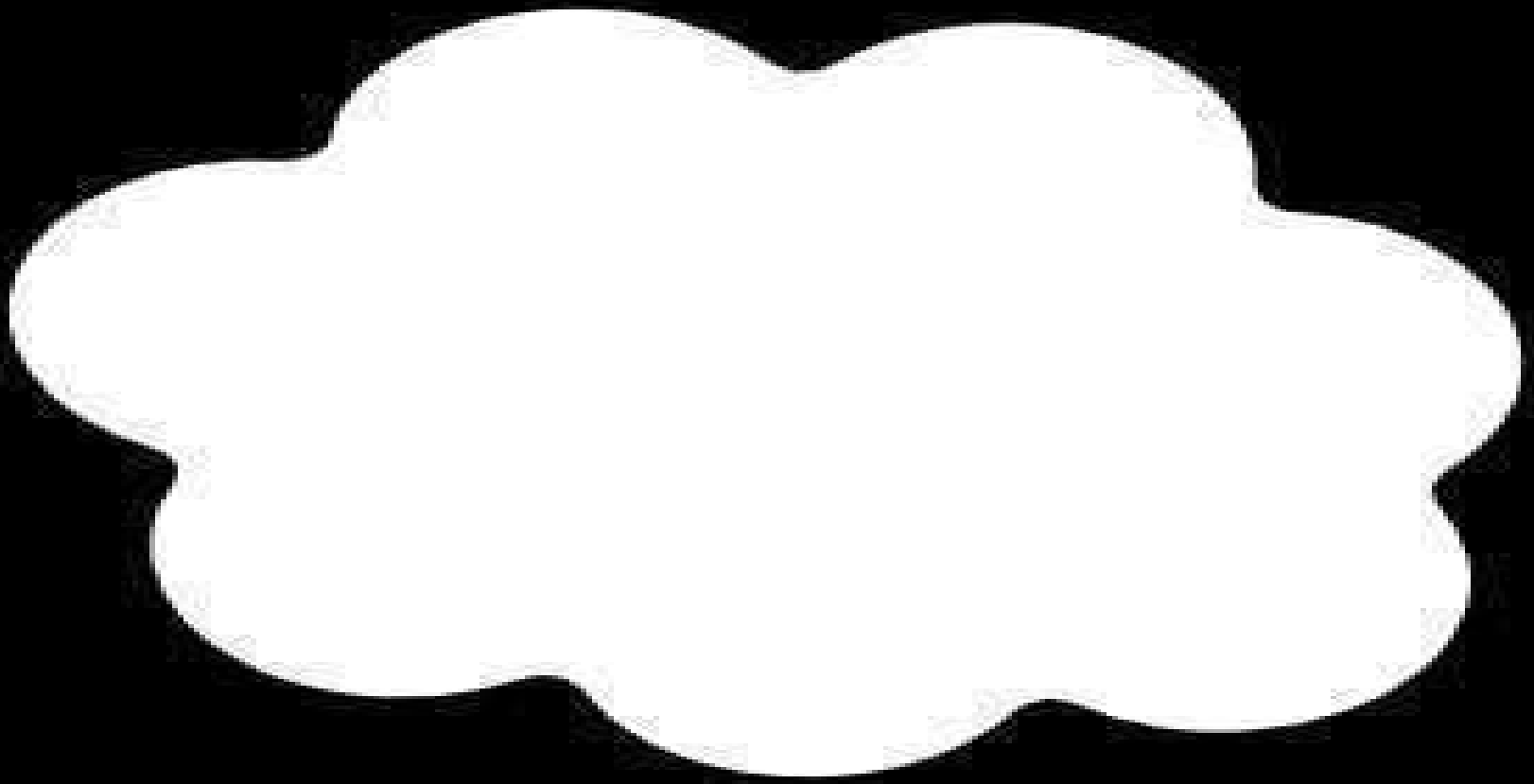
- Ultra sad and depressing music for the stratus cloud photo tour.
  - (Turn off lights for more gloom)
  - https://www.youtube.com/watch?v=QuNhTLVgV2Y


End Sad Music

- Which cloud type fits the following description?
  - Middle elevation, white, puffy, and represents pleasant weather.



- Answer! Cumulus Clouds.
  - Middle elevation, white, puffy, and represents pleasant weather.



- Which cloud type fits the following description?

- Which cloud type fits the following description?
  - High elevation, wispy, ice-crystals, and represents a change in weather is coming.

- Answer! Cirrus
  - High elevation, wispy, ice-crystals, and represents a change in weather is coming.

- Which cloud type fits the following description?
  - Low elevation, gray, precipitation.

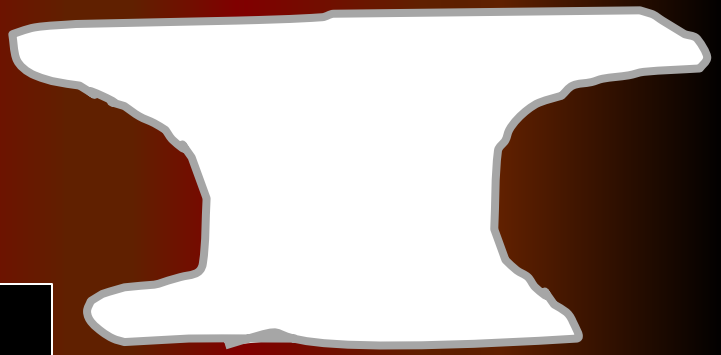
- Which cloud type fits the following description?
  - Low elevation, gray, precipitation.

- What type of cloud would this be?

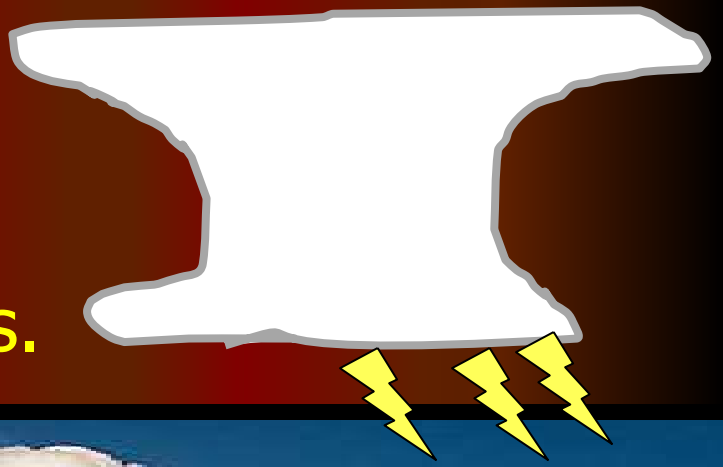
- Cumulonimbus
  - [redacted]
  - [redacted]

- Cumulonimbus
  - Very tall, anvil shaped
  - [redacted]

- Cumulonimbus
  - Very tall, anvil shaped
  - [redacted]



- Cumulonimbus
  - Very tall, anvil shaped
  - Massive thunderstorms.



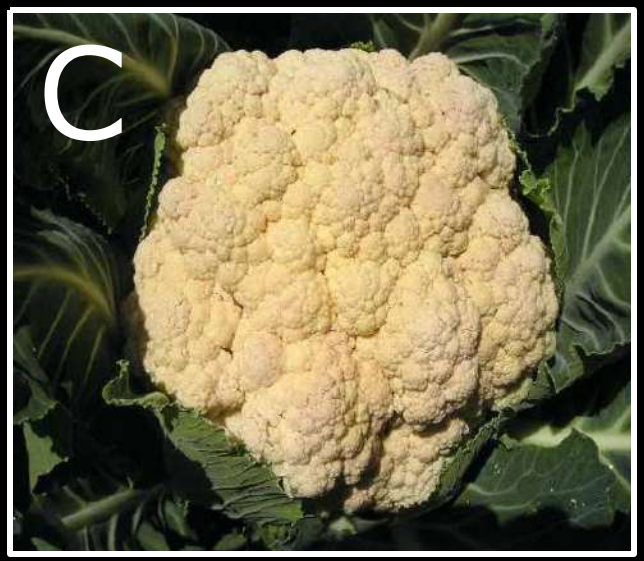
- This is a picture of a lenticular cloud.
  - Lens shaped, forms at high altitudes.

- Which picture below best represents a cumulus cloud?

A

B

C



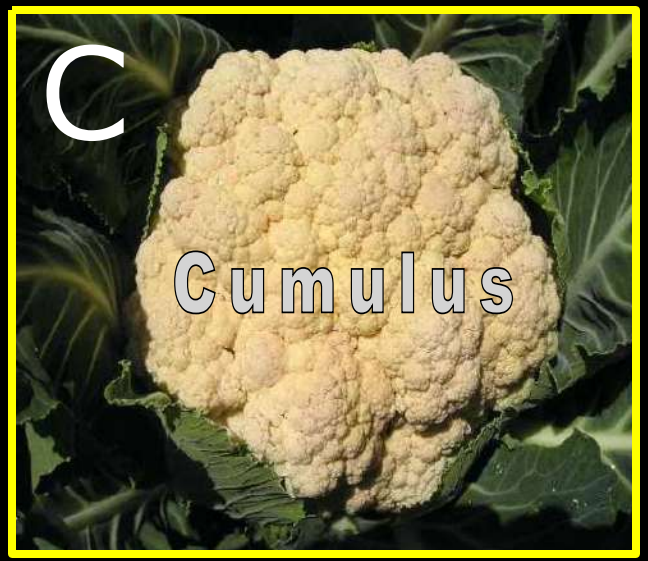
D

- Which picture below best represents a cumulus cloud?

A

B

C



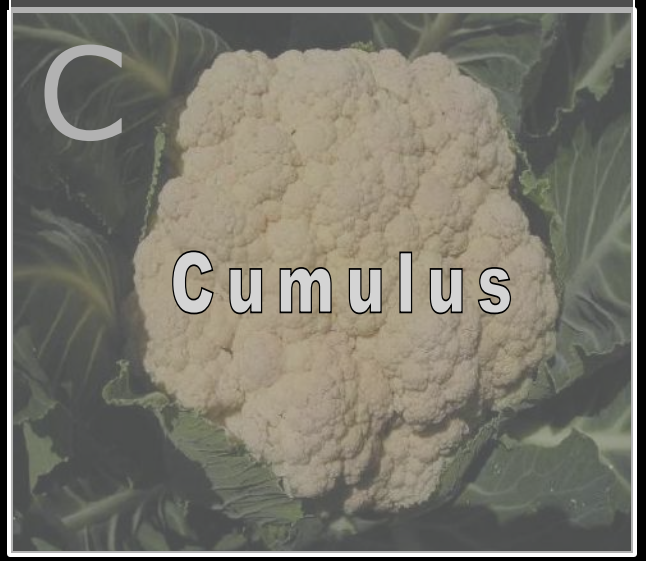
D

- Which picture below best represents a stratus cloud?

A

B

C



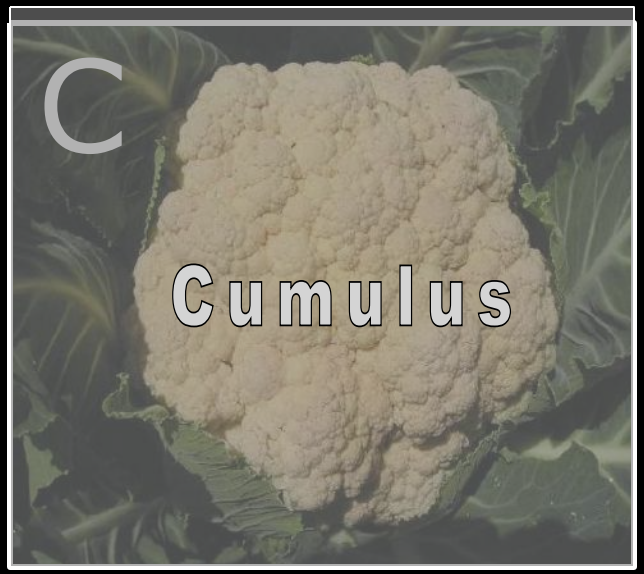
D

- Which picture below best represents a stratus cloud?

A

B

C



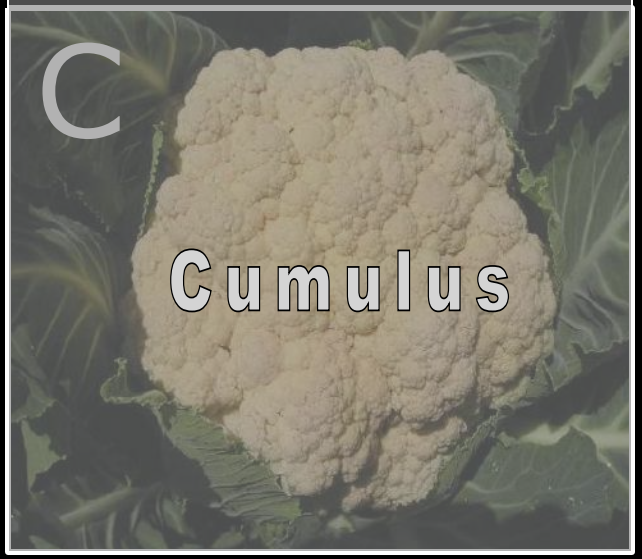
D

- Which picture below best represents a cumulonimbus cloud?

A

B

C



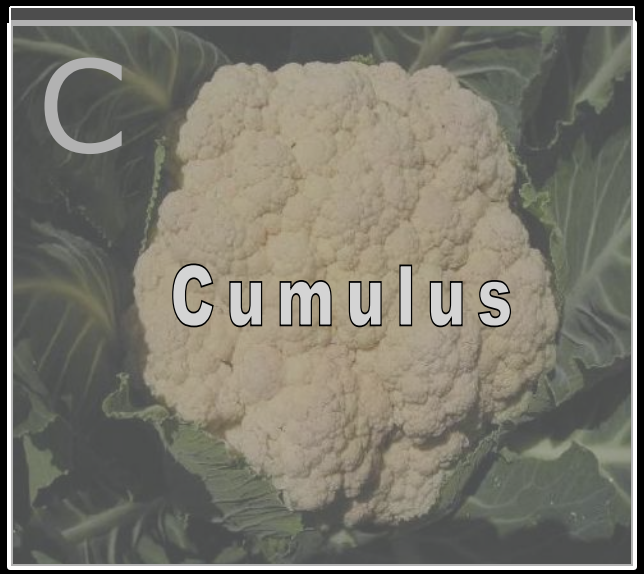
D

- Which picture below best represents a cumulonimbus cloud?

A

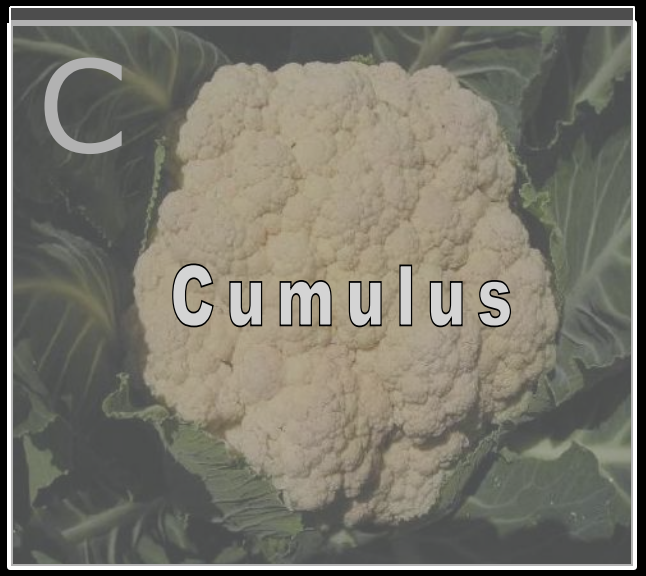
B

C

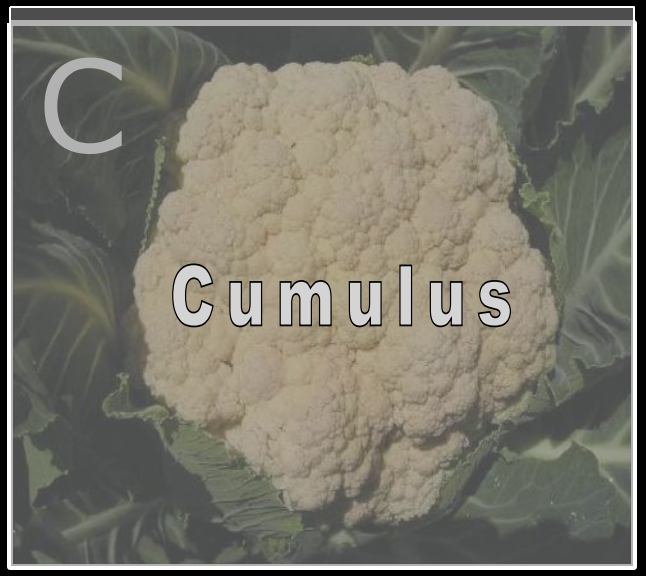


D

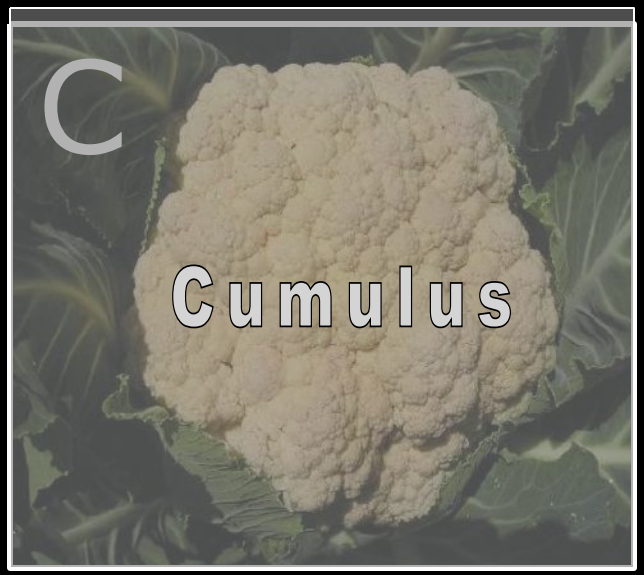
- Which picture below best represents a cirrus cloud?



- Which picture below best represents a cirrus cloud?



- Which picture below best represents a cirrus cloud?

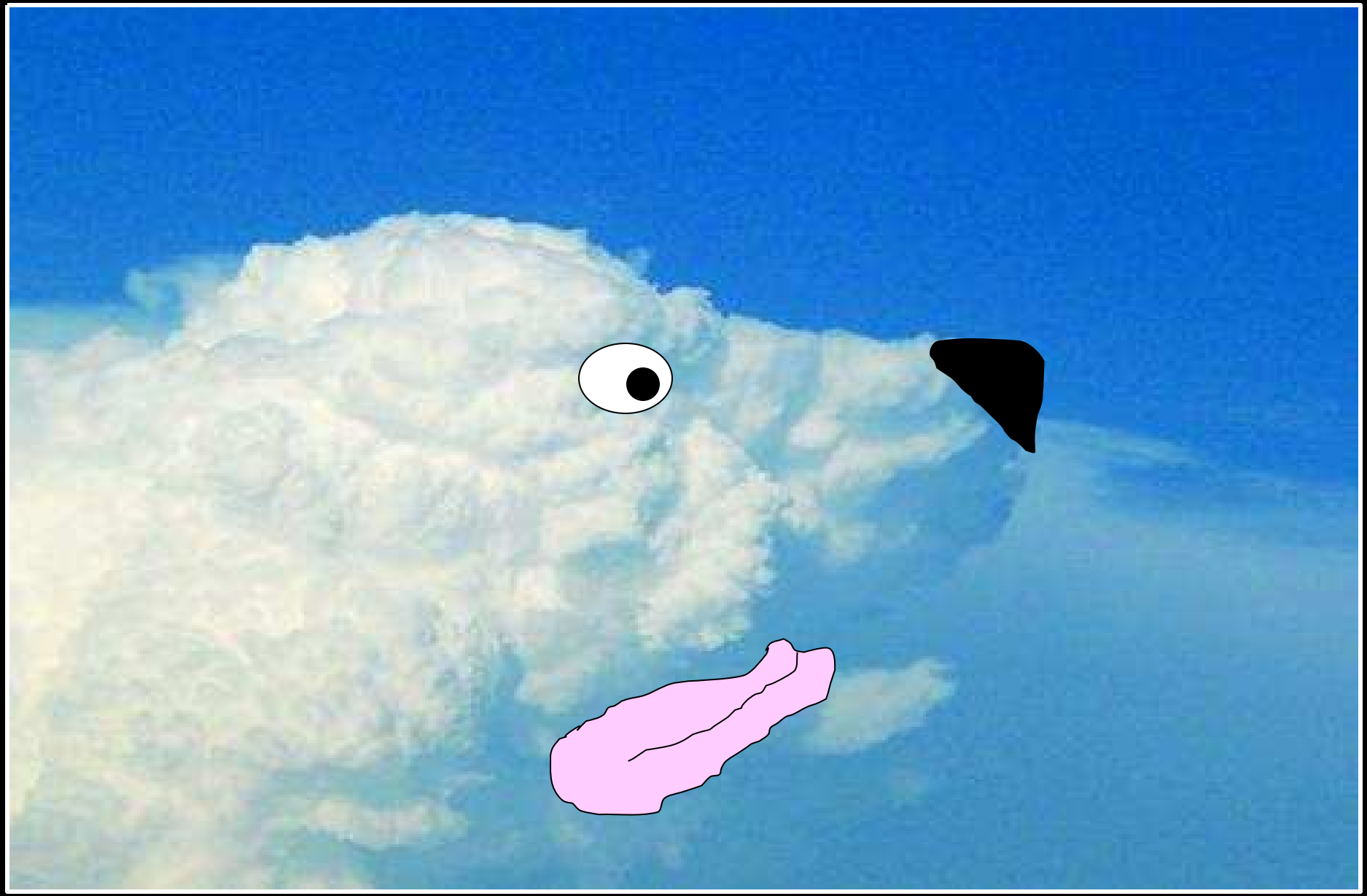


- What cloud is this?

- What cloud is this? Cumulus

- What cloud is this?

- What cloud is this? Cumulus

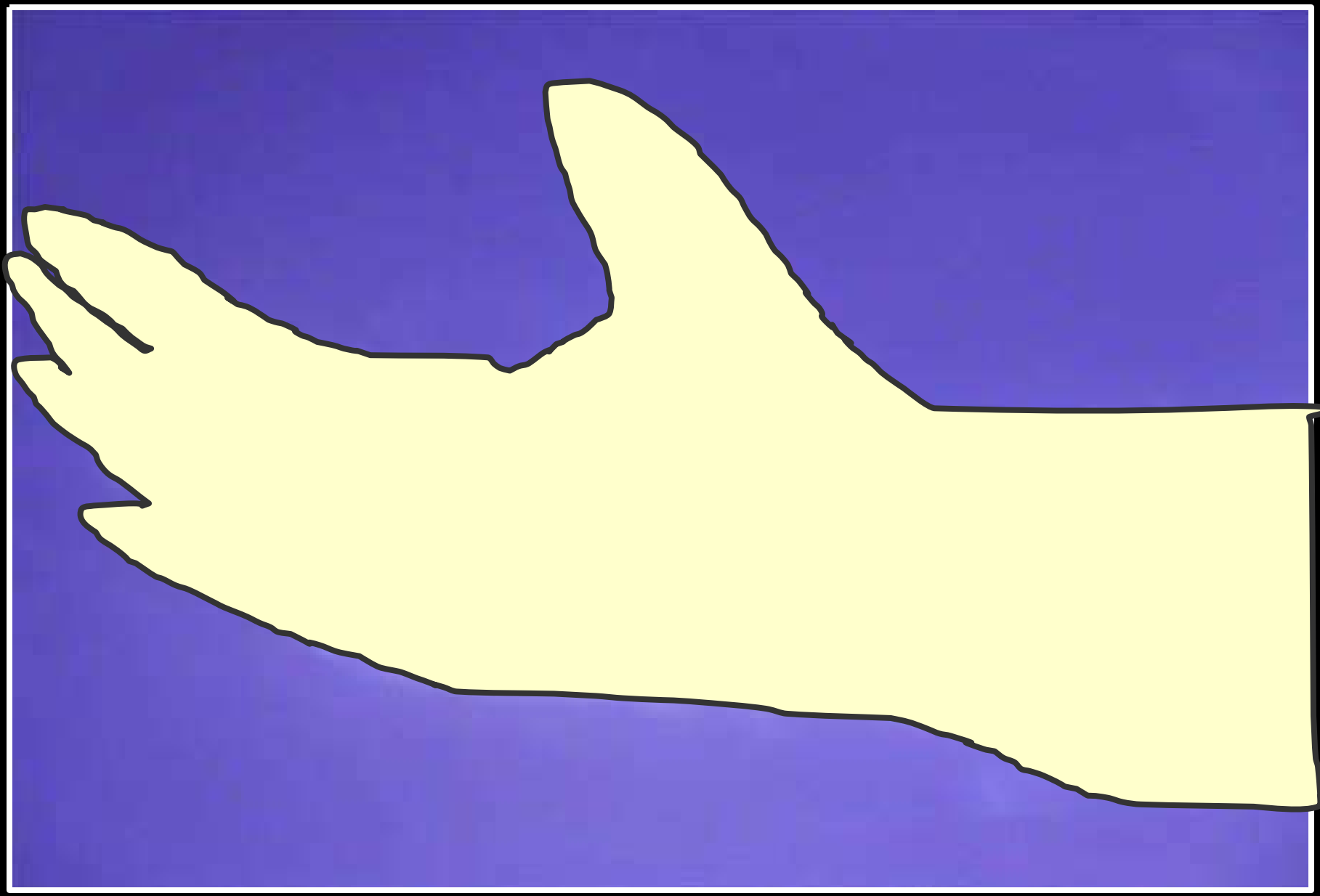


- What type of cloud is this?

- What type of cloud is this? Stratus

- What cloud type is this?

- What cloud type is this? Cirrus

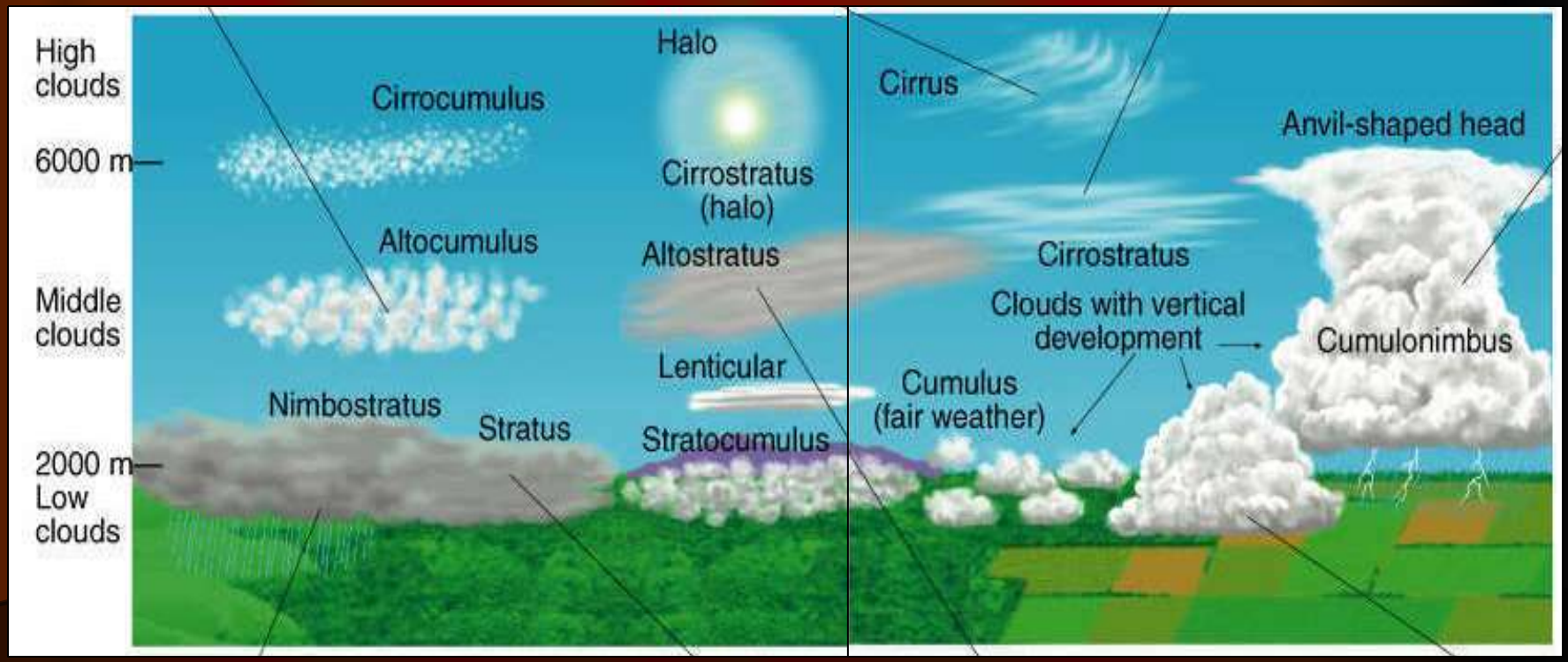



Cumulus


Cumulus

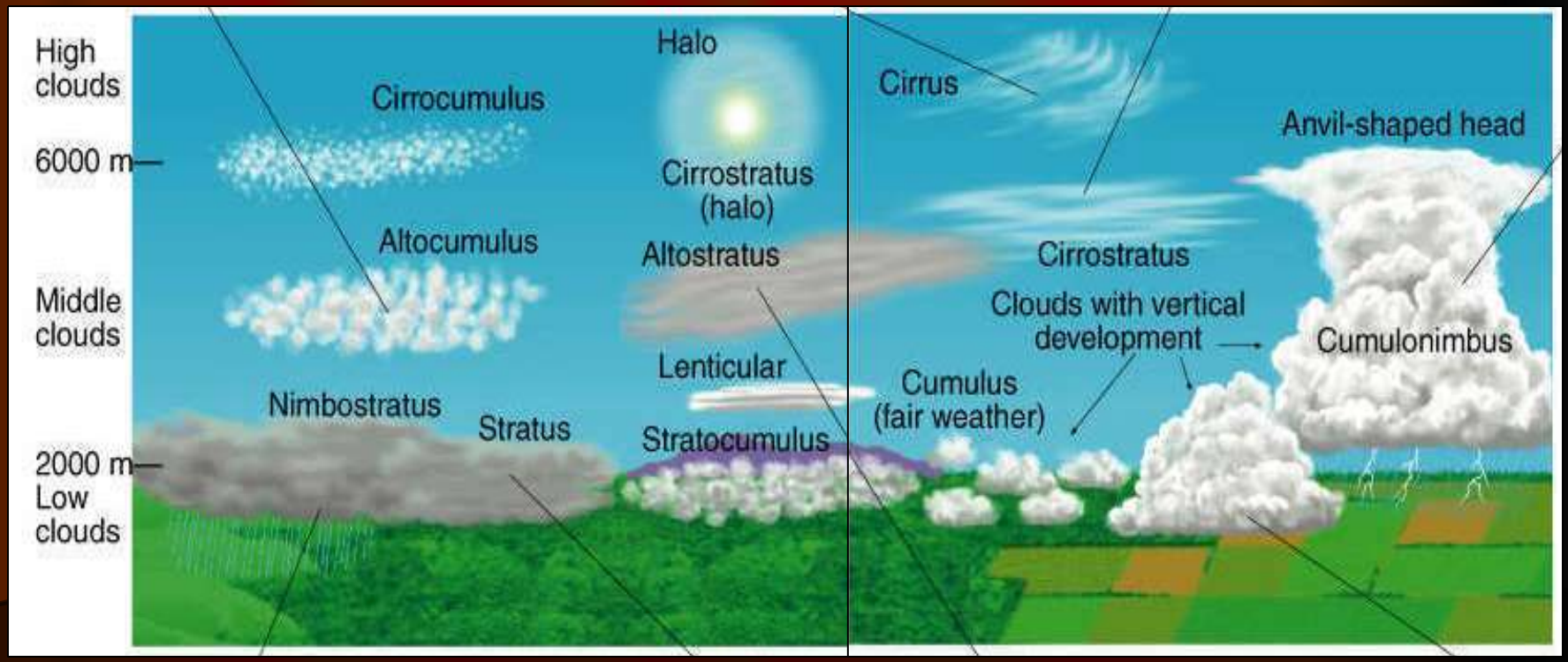
Cloud Prefixes

- [redacted] - [redacted]
- [redacted] - [redacted]
- [redacted] - [redacted]
- [redacted] - [redacted]



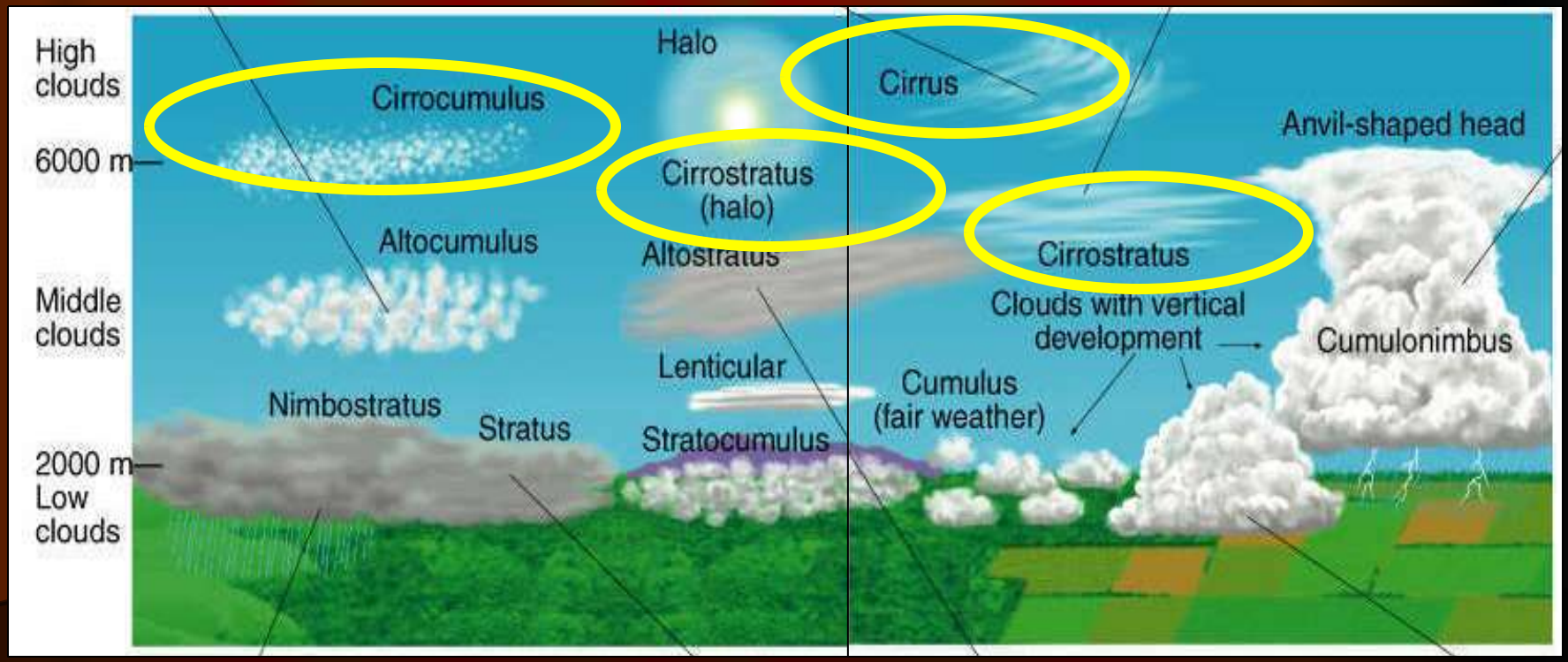
Cloud Prefixes

- Cirro -
- [redacted] -
- [redacted] -
- [redacted] -

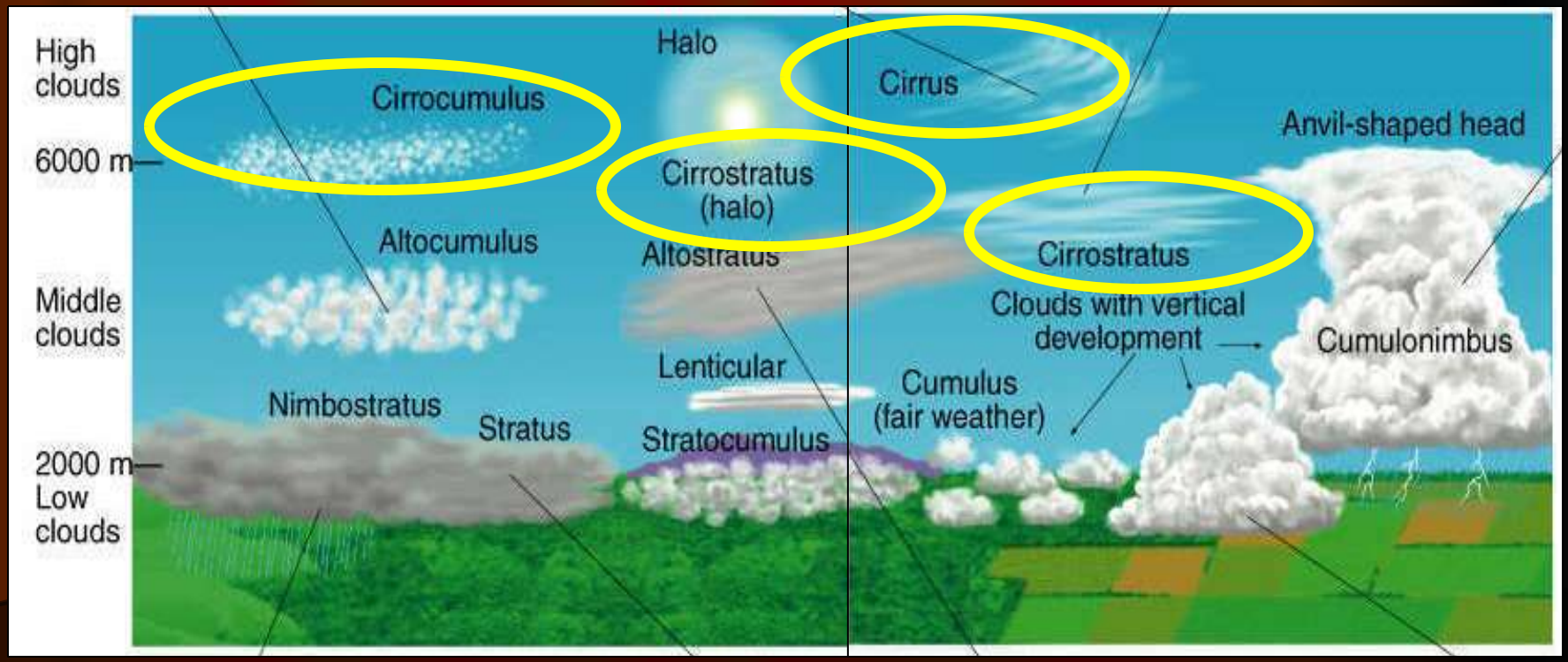


Cloud Prefixes

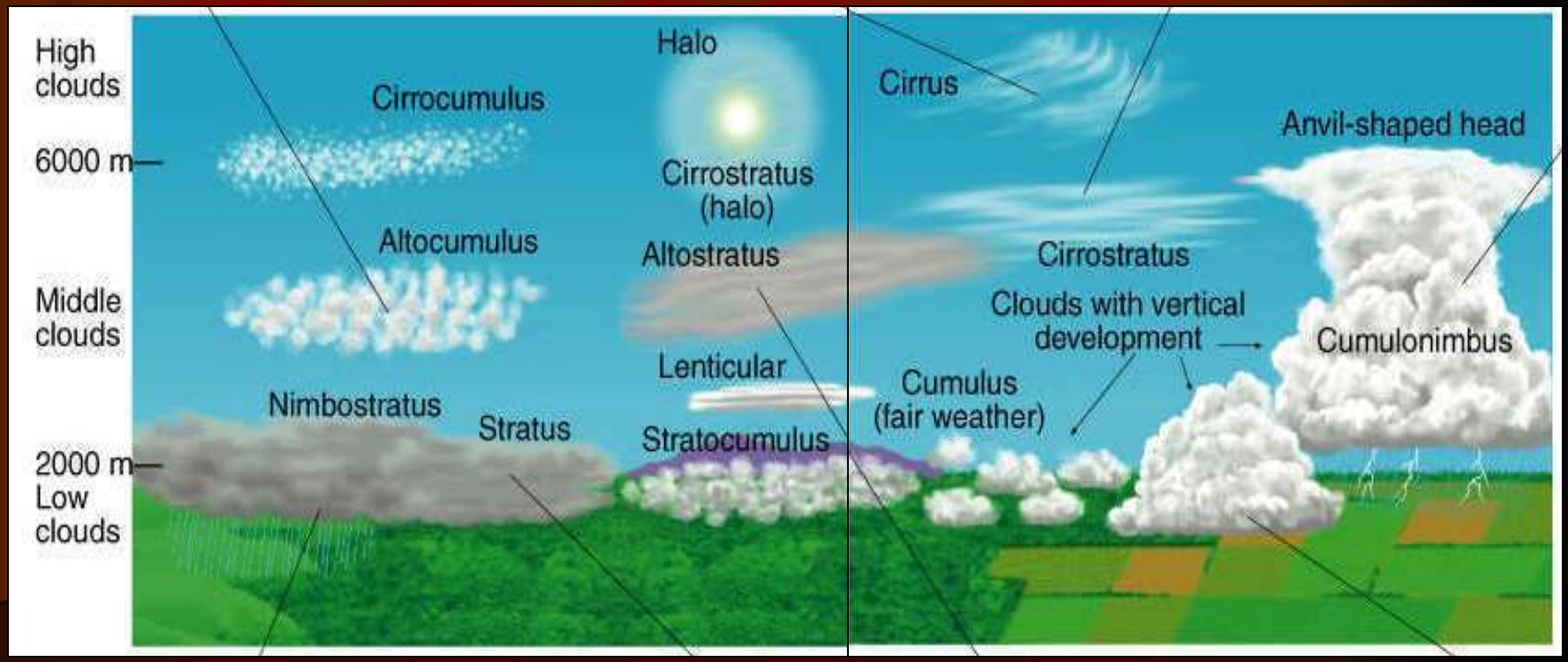
- Cirro -
- [redacted] -
- [redacted] -
- [redacted] -



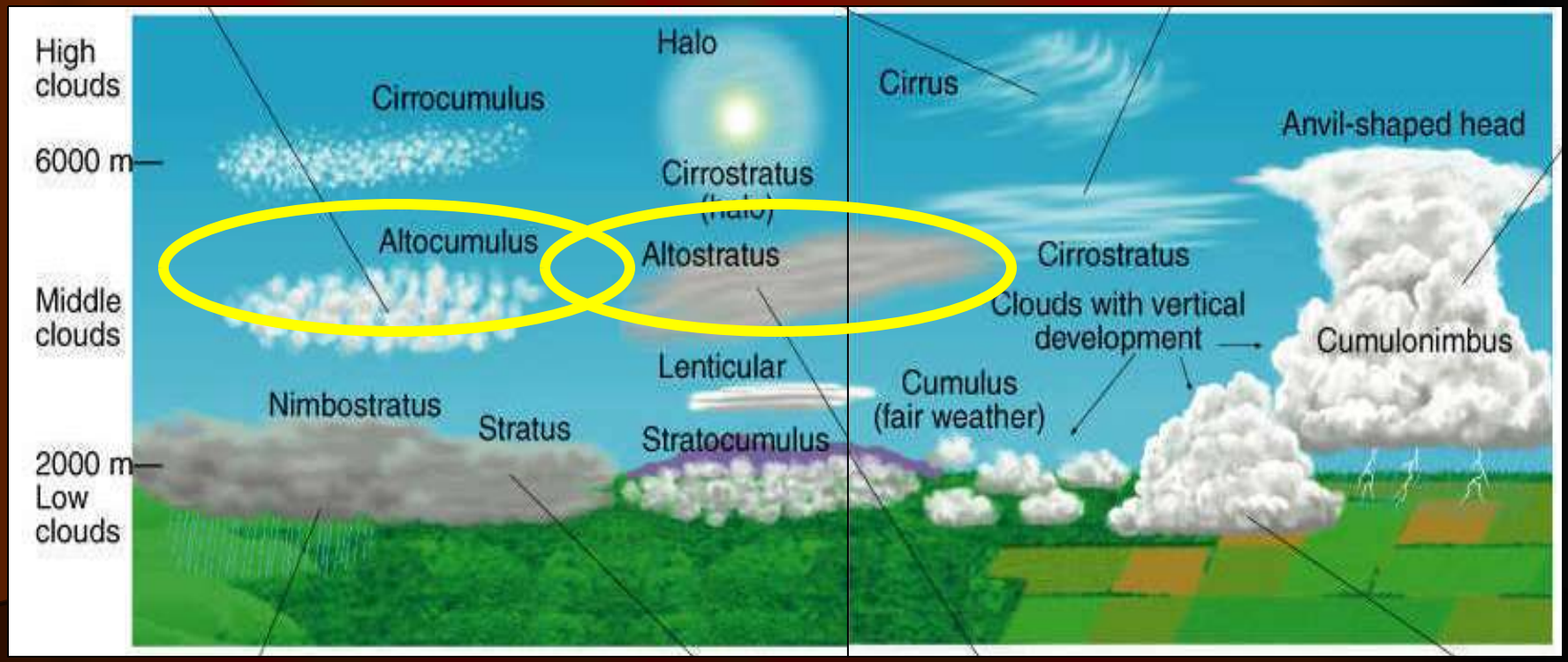
- Cloud Prefixes
  - Cirro - High Altitude
  - [redacted] - [redacted]
  - [redacted] - [redacted]
  - [redacted] - [redacted]



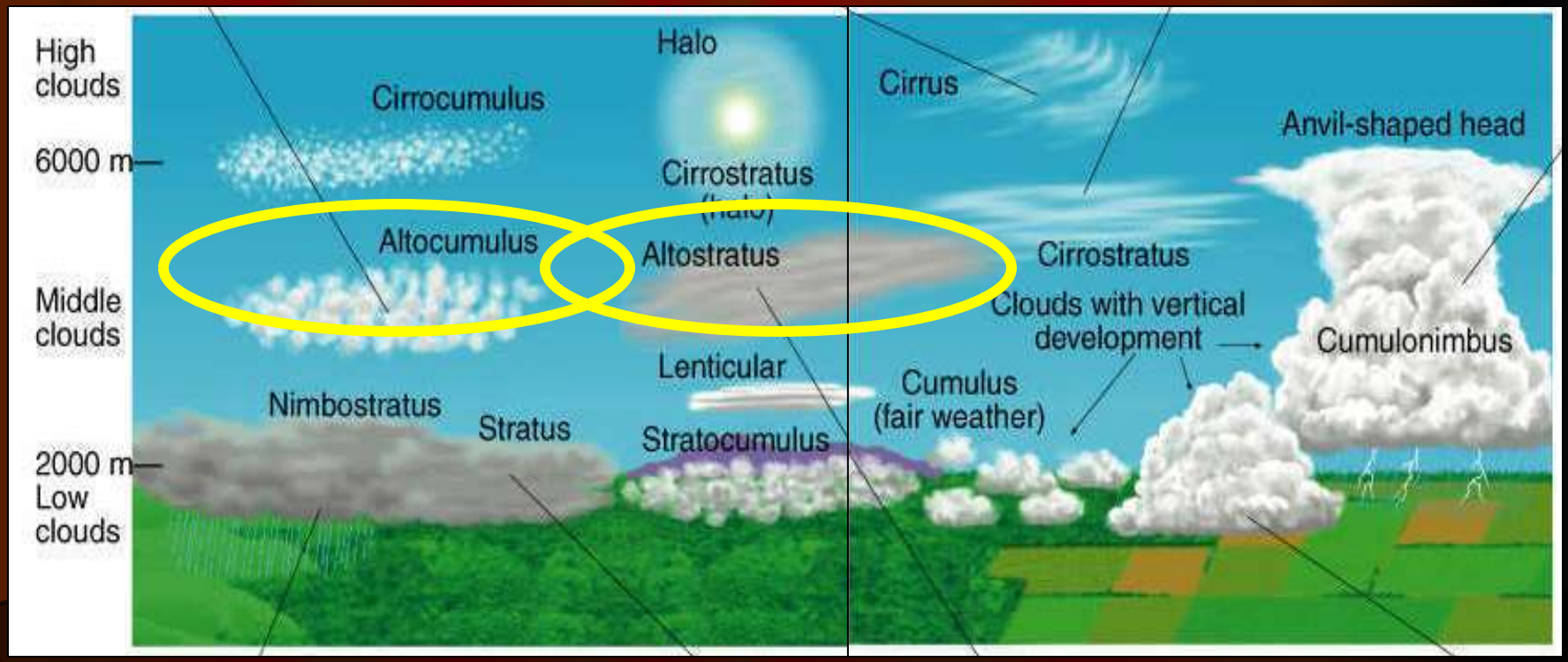
- Cloud Prefixes
  - Cirro - High Altitude
  - Alto -
  - [redacted] -
  - [redacted] -



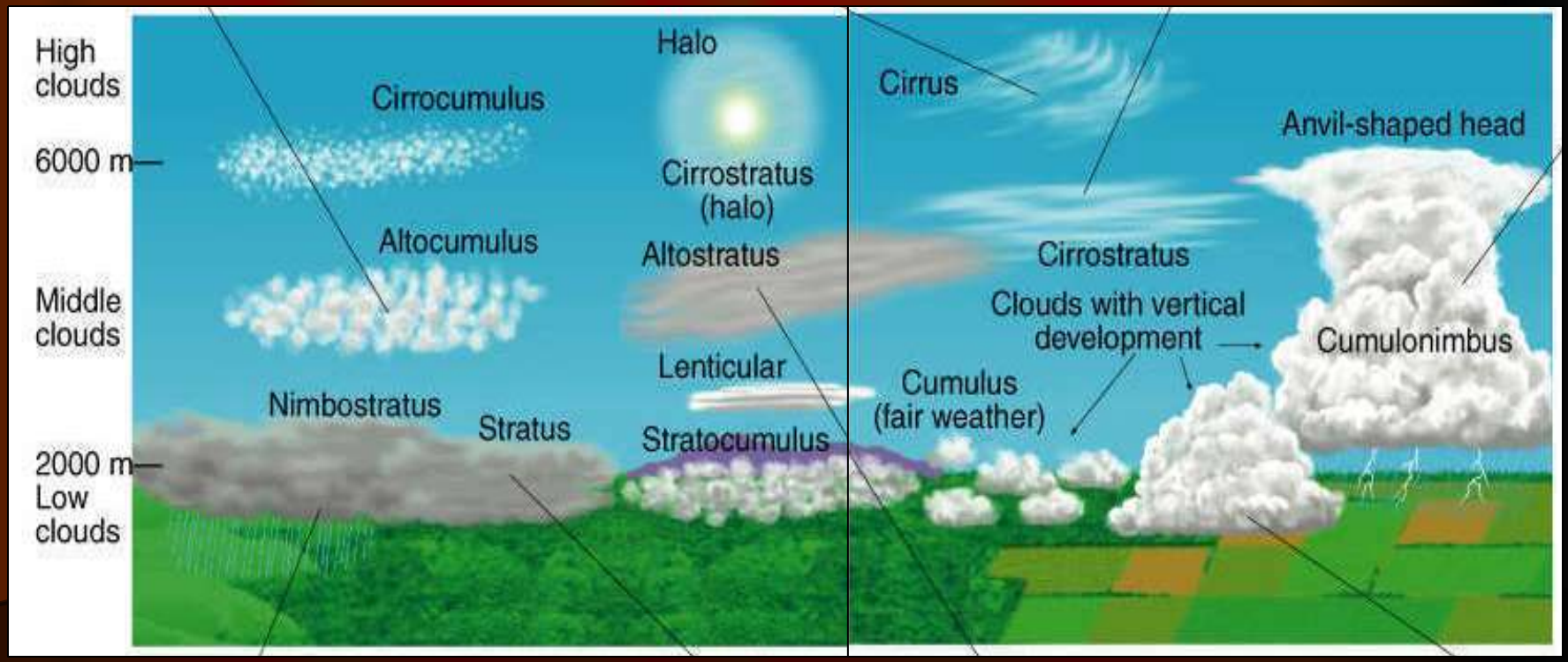
- Cloud Prefixes
  - Cirro - High Altitude
  - Alto - [redacted]
  - [redacted] - [redacted]
  - [redacted] - [redacted]



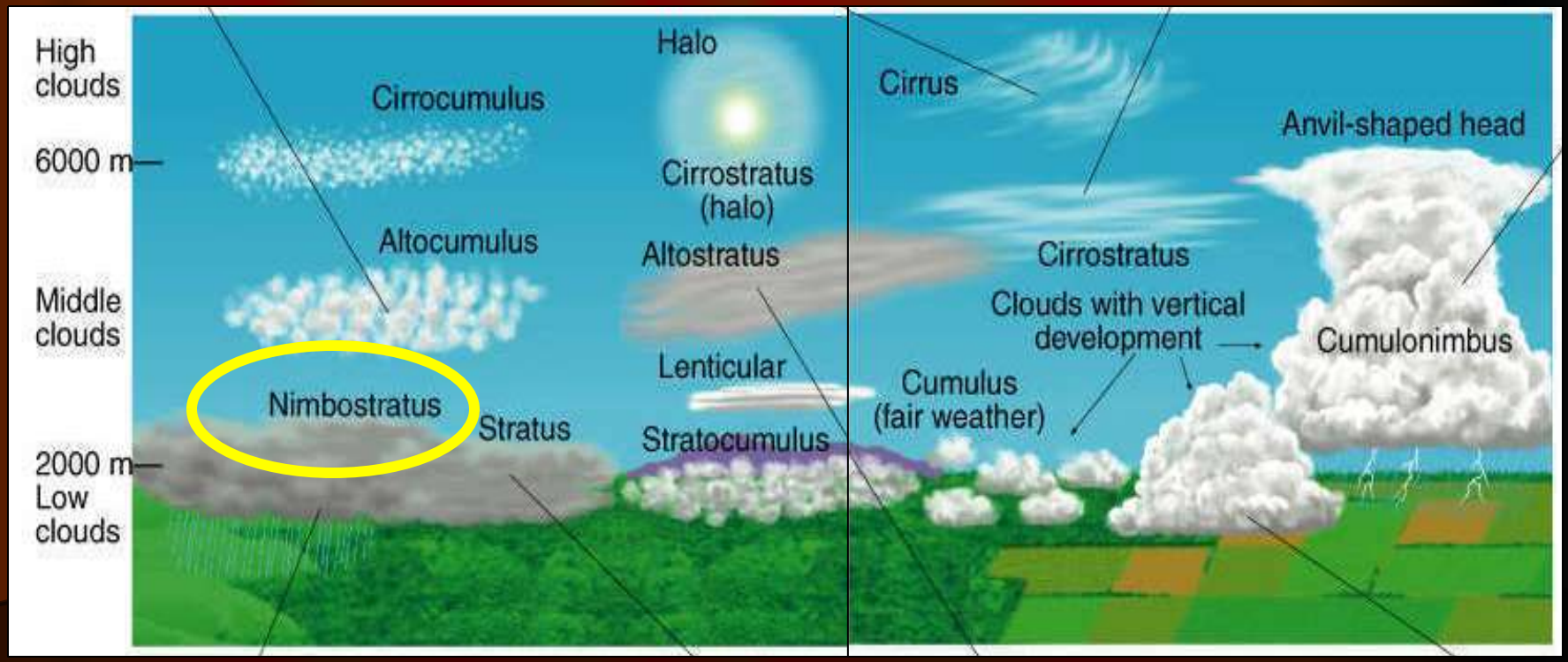
- Cloud Prefixes
  - Cirro - High Altitude
  - Alto - Middle
  - [redacted] -
  - [redacted] -



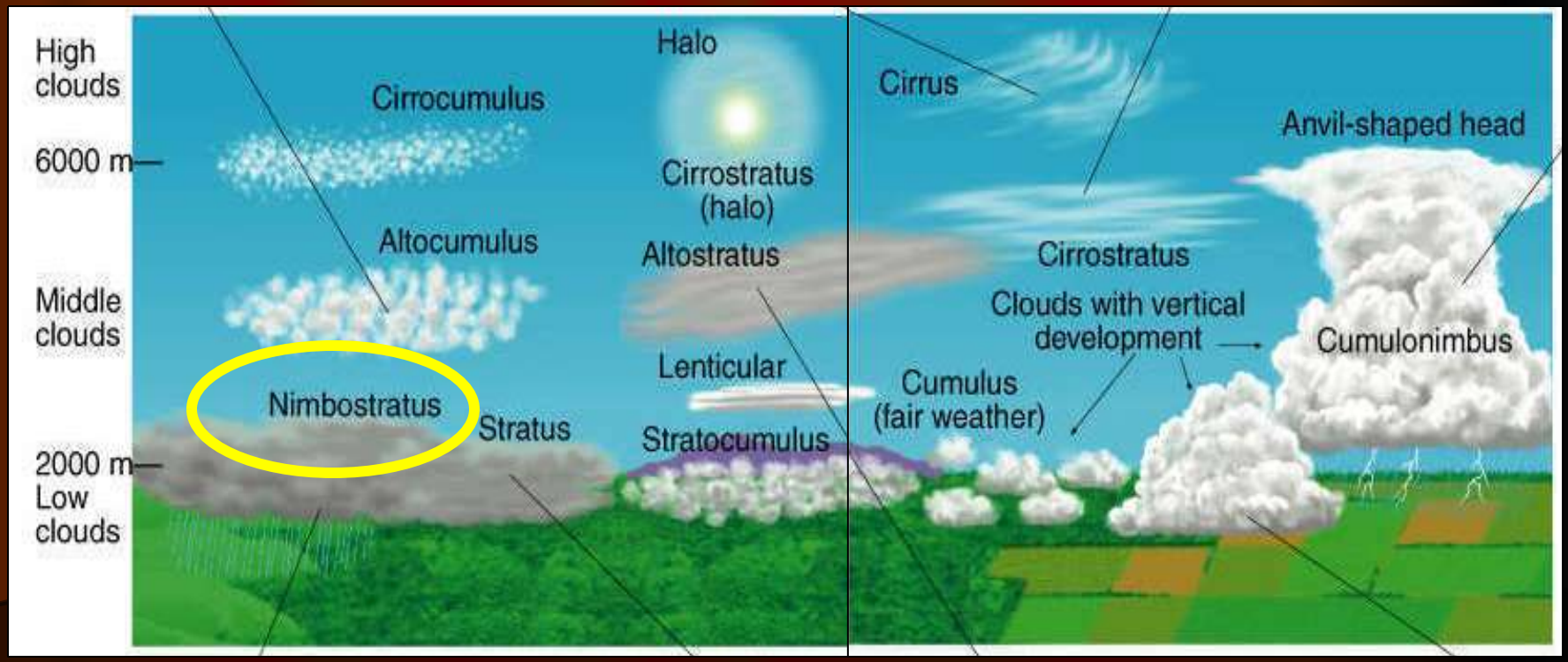
- Cloud Prefixes
  - Cirro - High Altitude
  - Alto - Middle
  - Nimbo - [redacted]
  - [redacted] - [redacted]



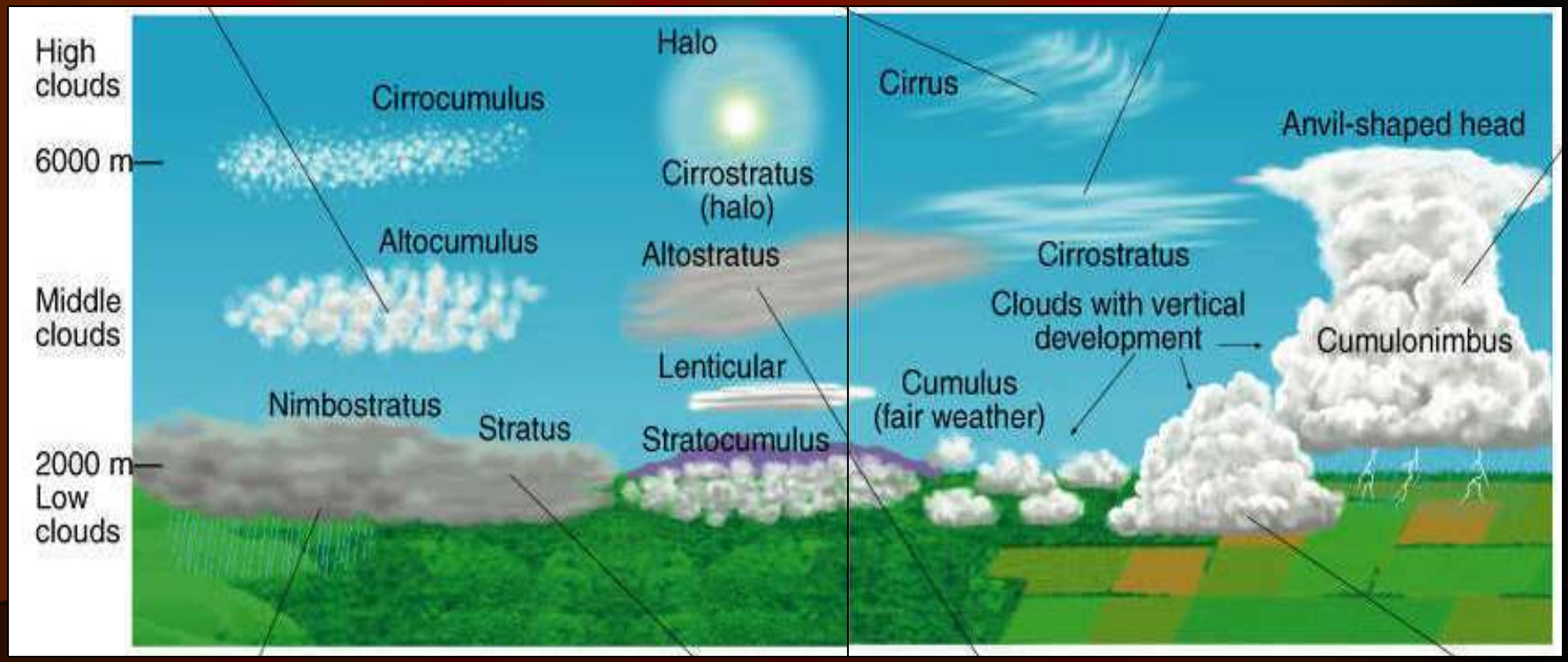
- Cloud Prefixes
  - Cirro - High Altitude
  - Alto - Middle
  - Nimbo - [redacted]
  - [redacted] - [redacted]



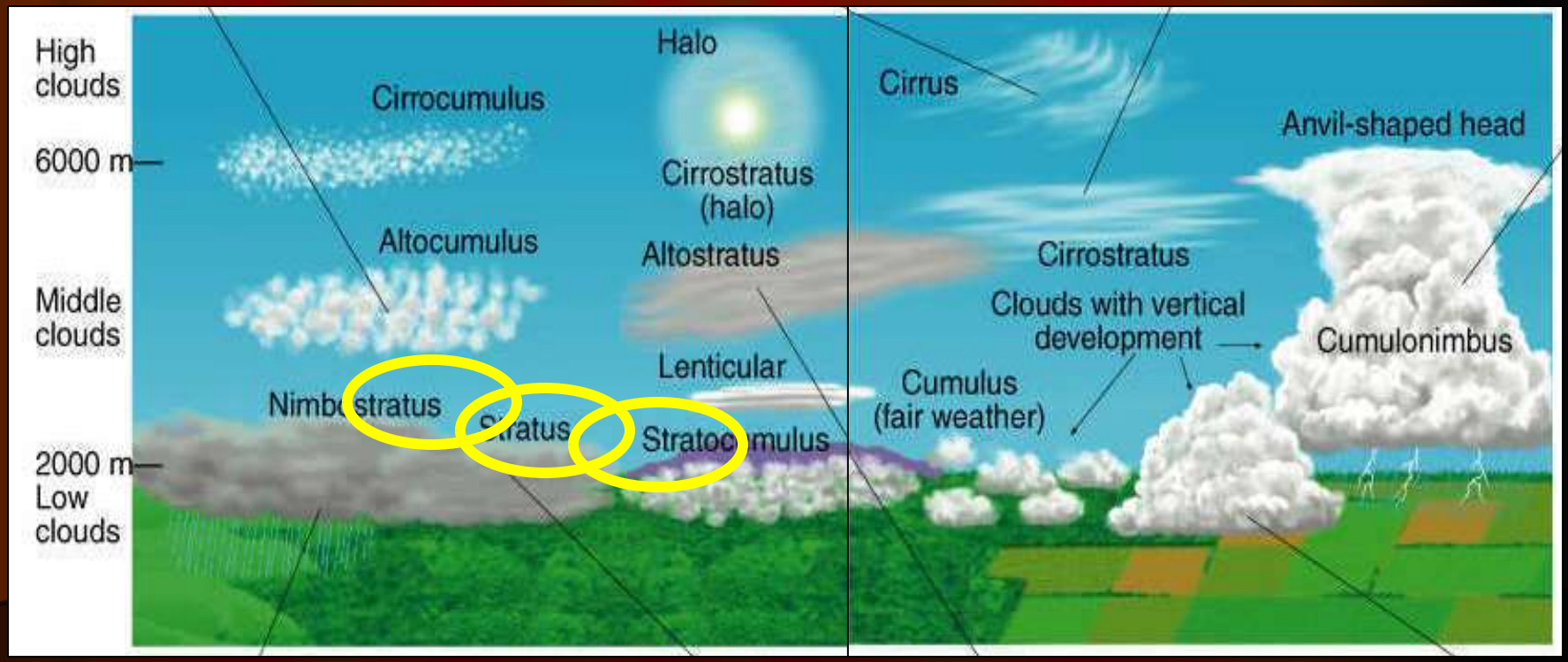
- Cloud Prefixes
  - Cirro - High Altitude
  - Alto - Middle
  - Nimbo - Low
  - [redacted] - [redacted]



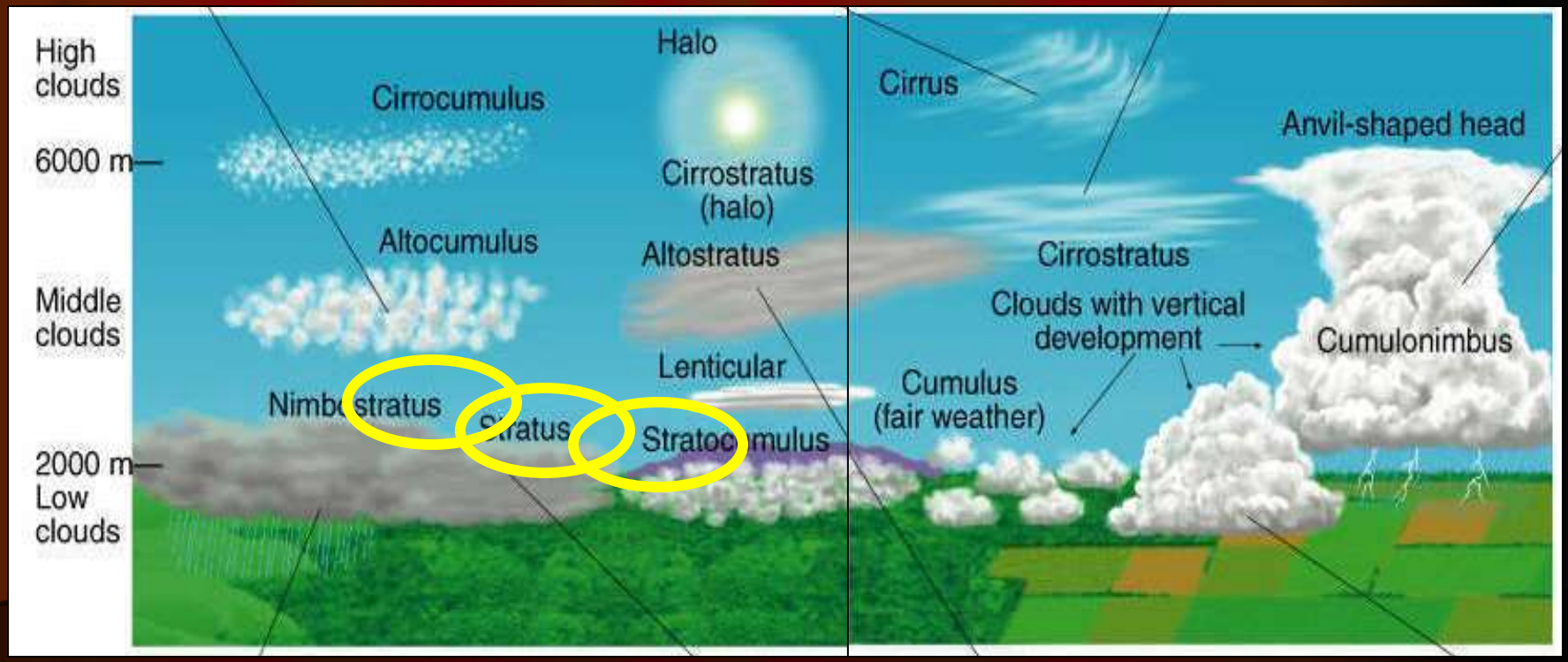
- Cloud Prefixes
  - Cirro - High Altitude
  - Alto - Middle
  - Nimbo - Low
  - Strato - [redacted]



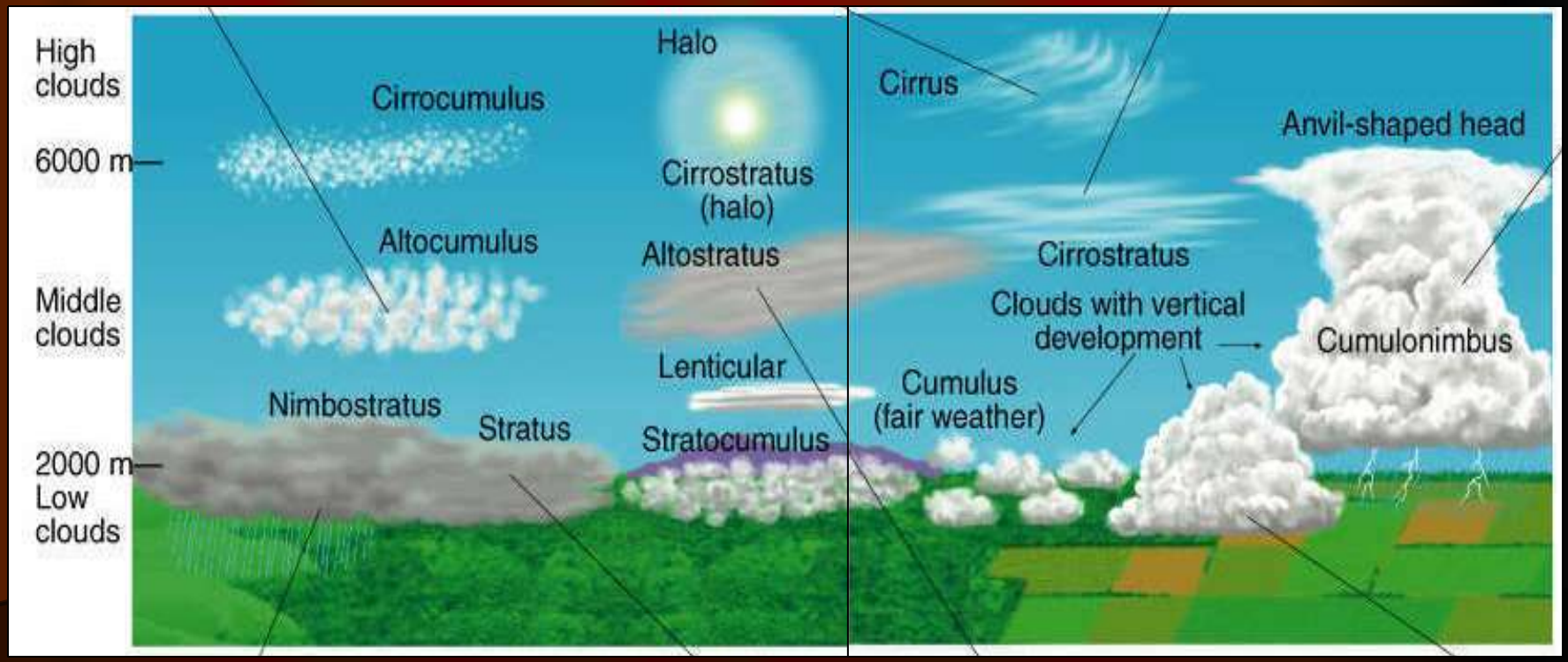
- Cloud Prefixes
  - Cirro - High Altitude
  - Alto - Middle
  - Nimbo - Low
  - Strato - [redacted]



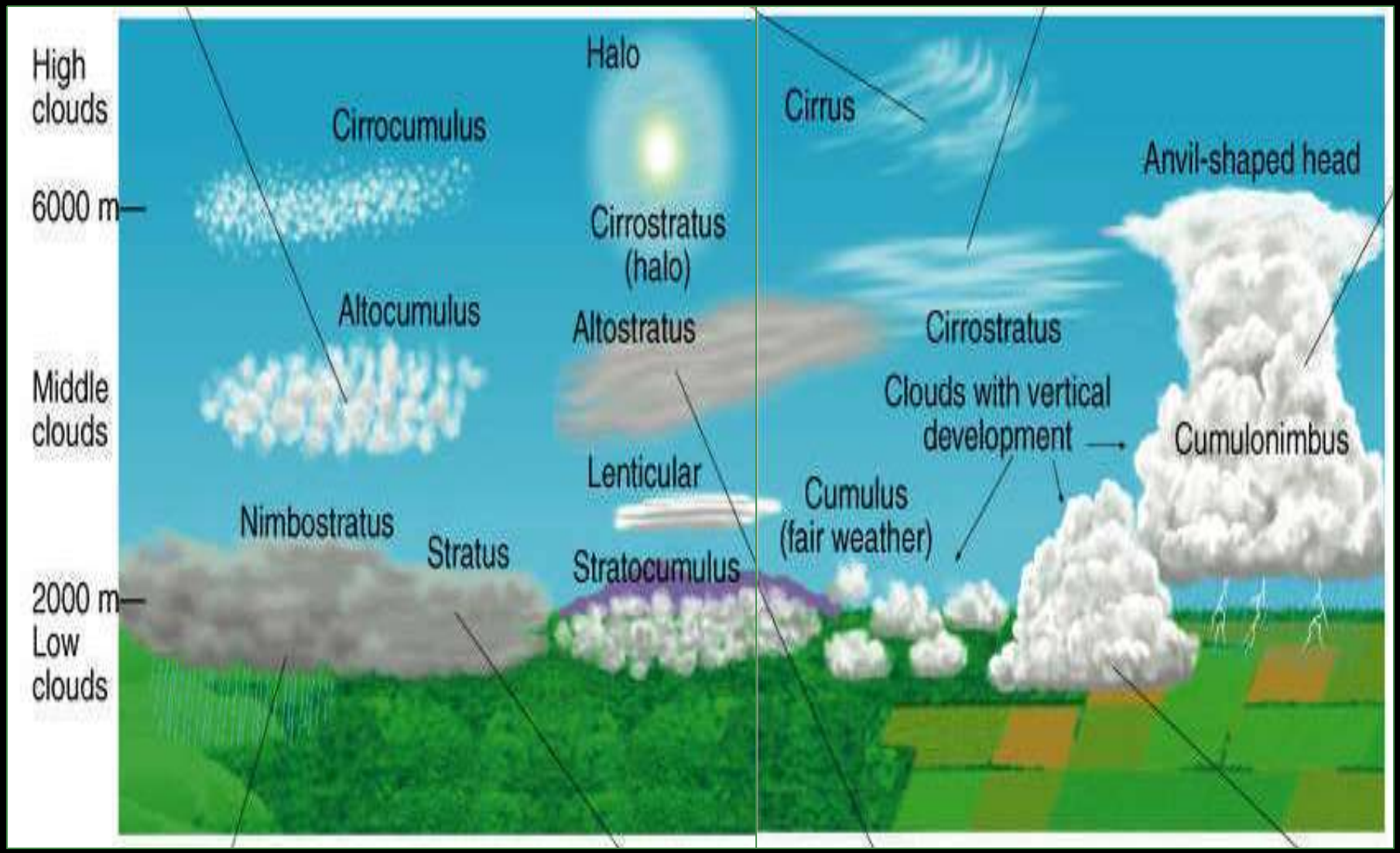
- Cloud Prefixes
  - Cirro - High Altitude
  - Alto - Middle
  - Nimbo - Low
  - Strato - Layered

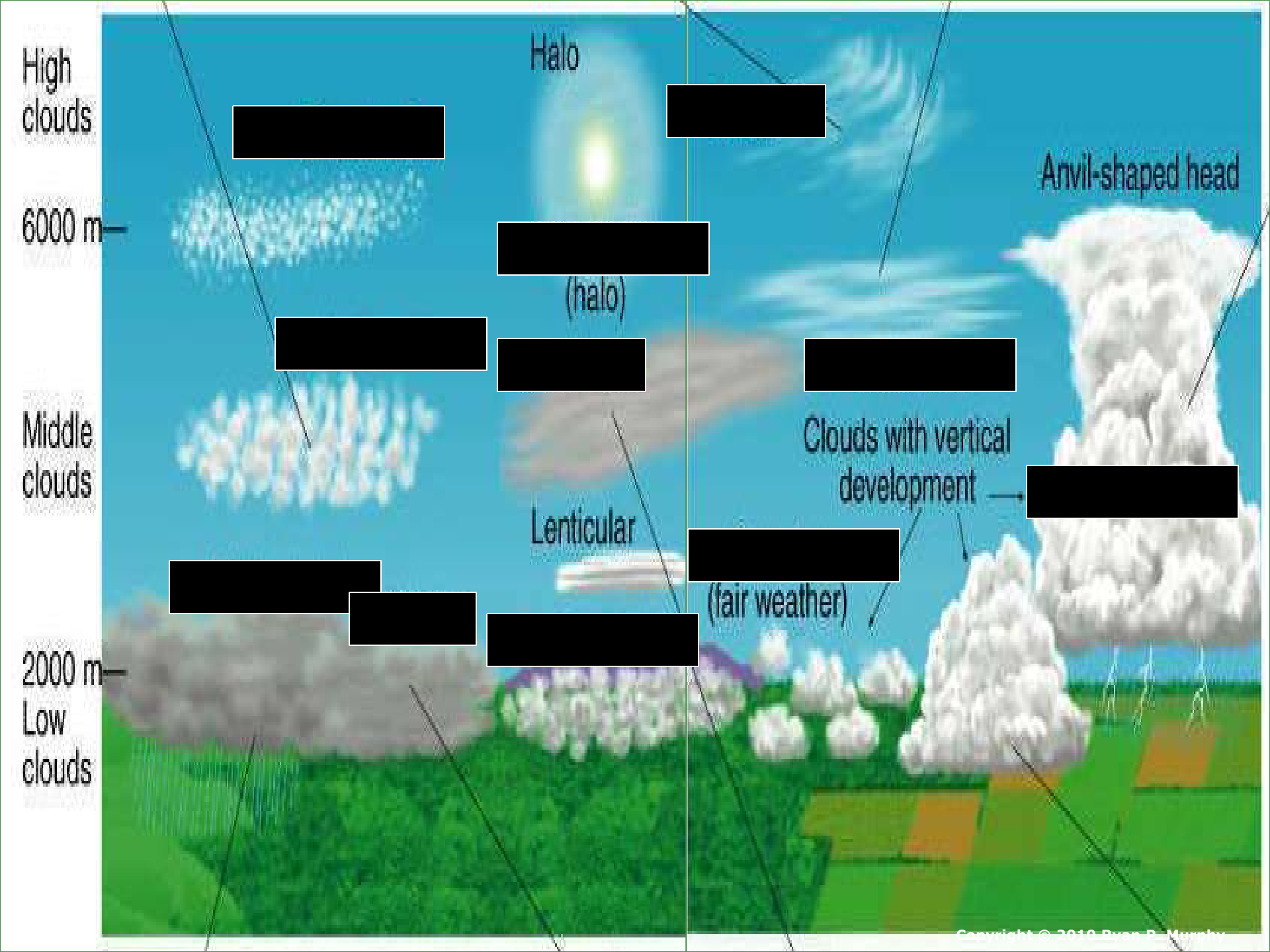


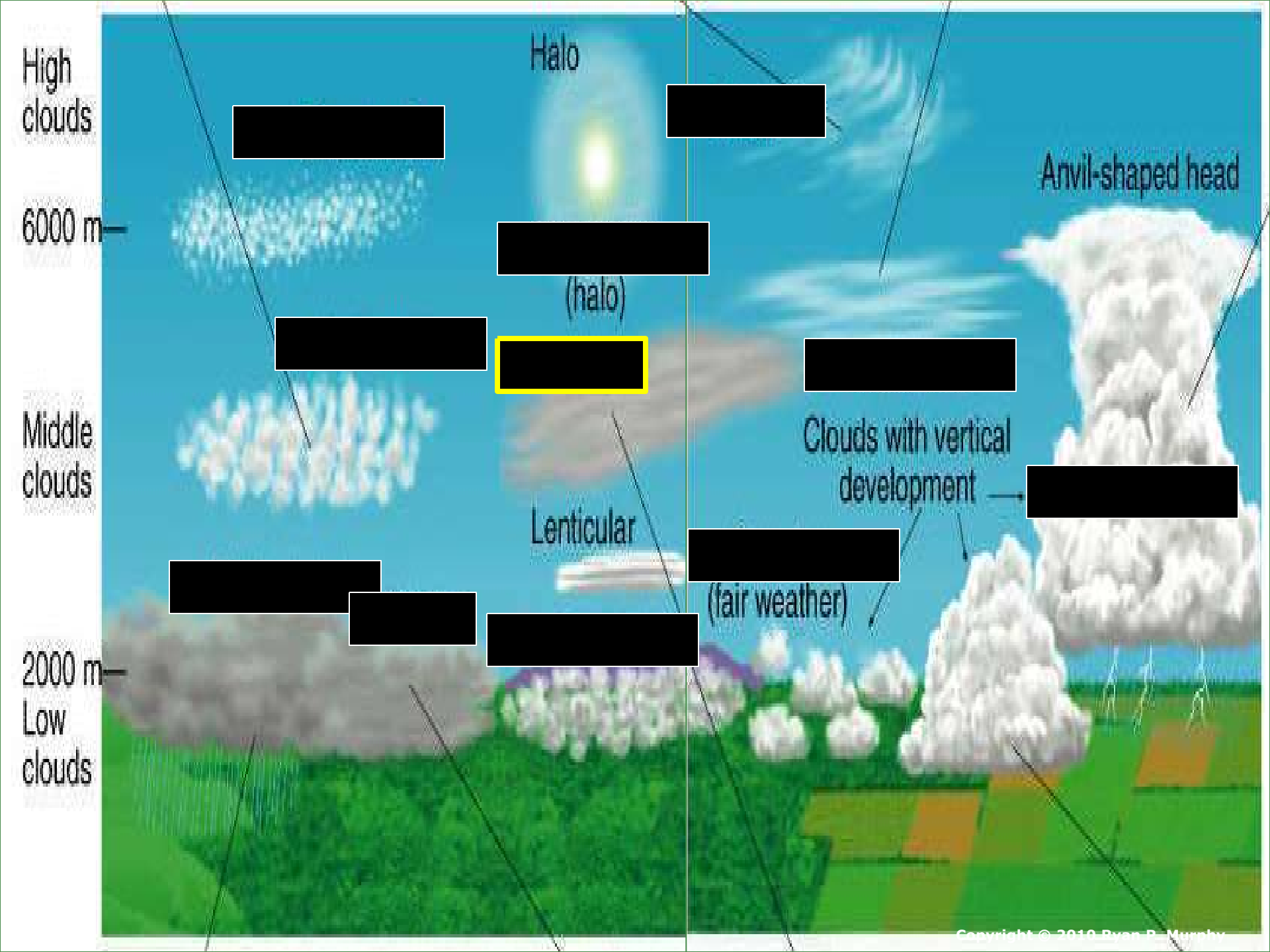
- Cloud Prefixes
  - Cirro - High Altitude
  - Alto - Middle
  - Nimbo - Low
  - Strato - Layered

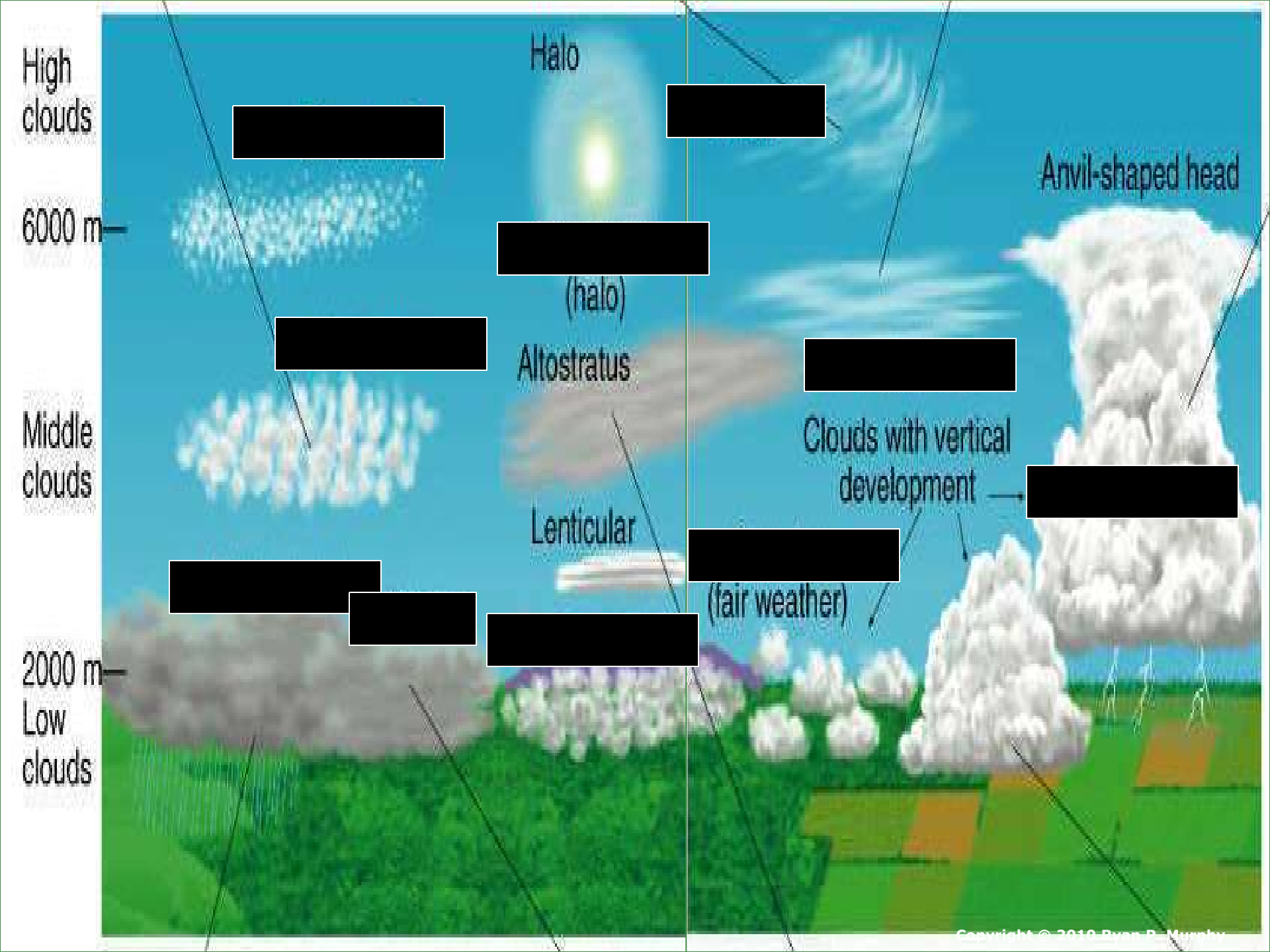


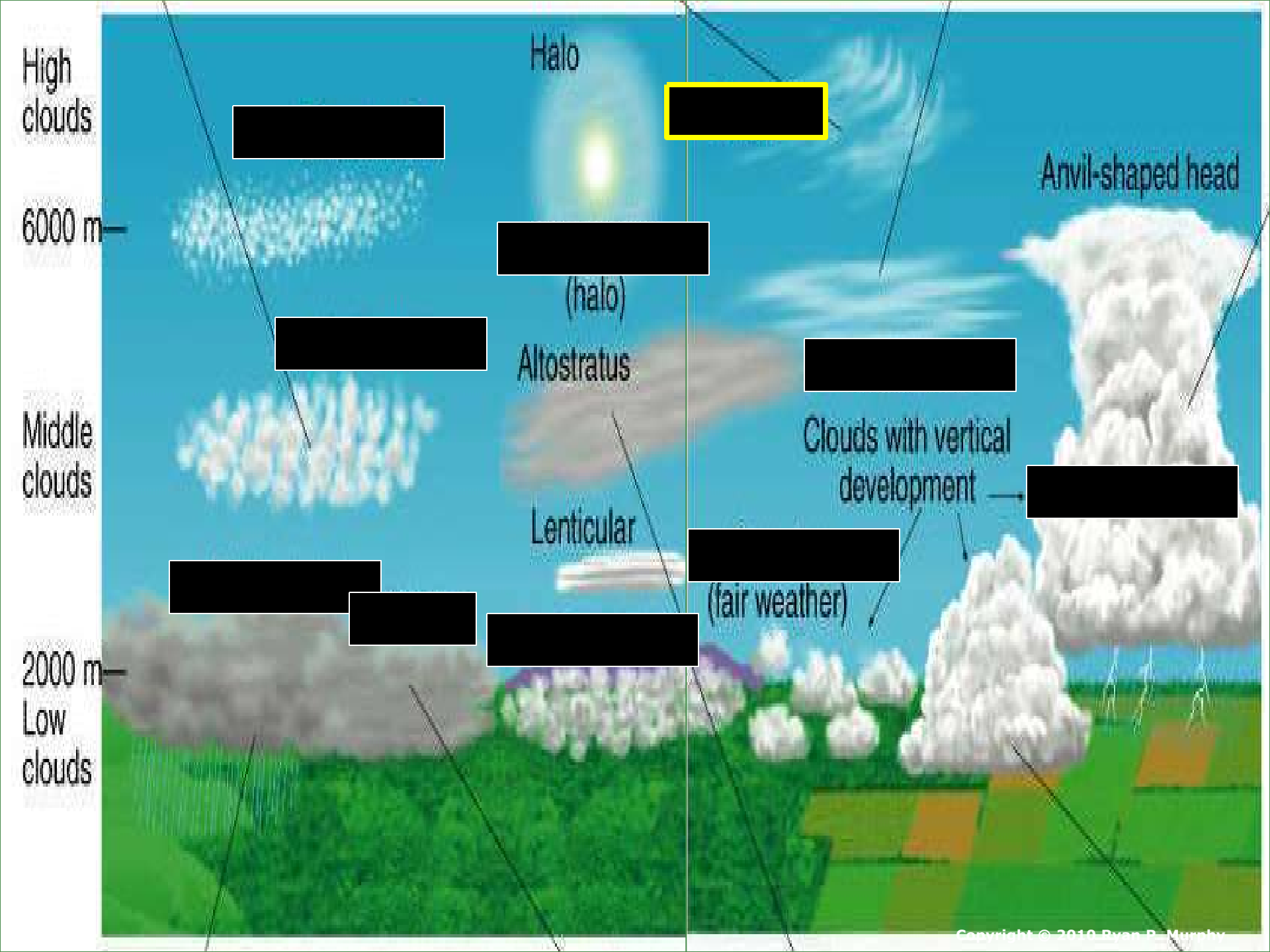
- Activity! Study this picture to prepare for the quiz.

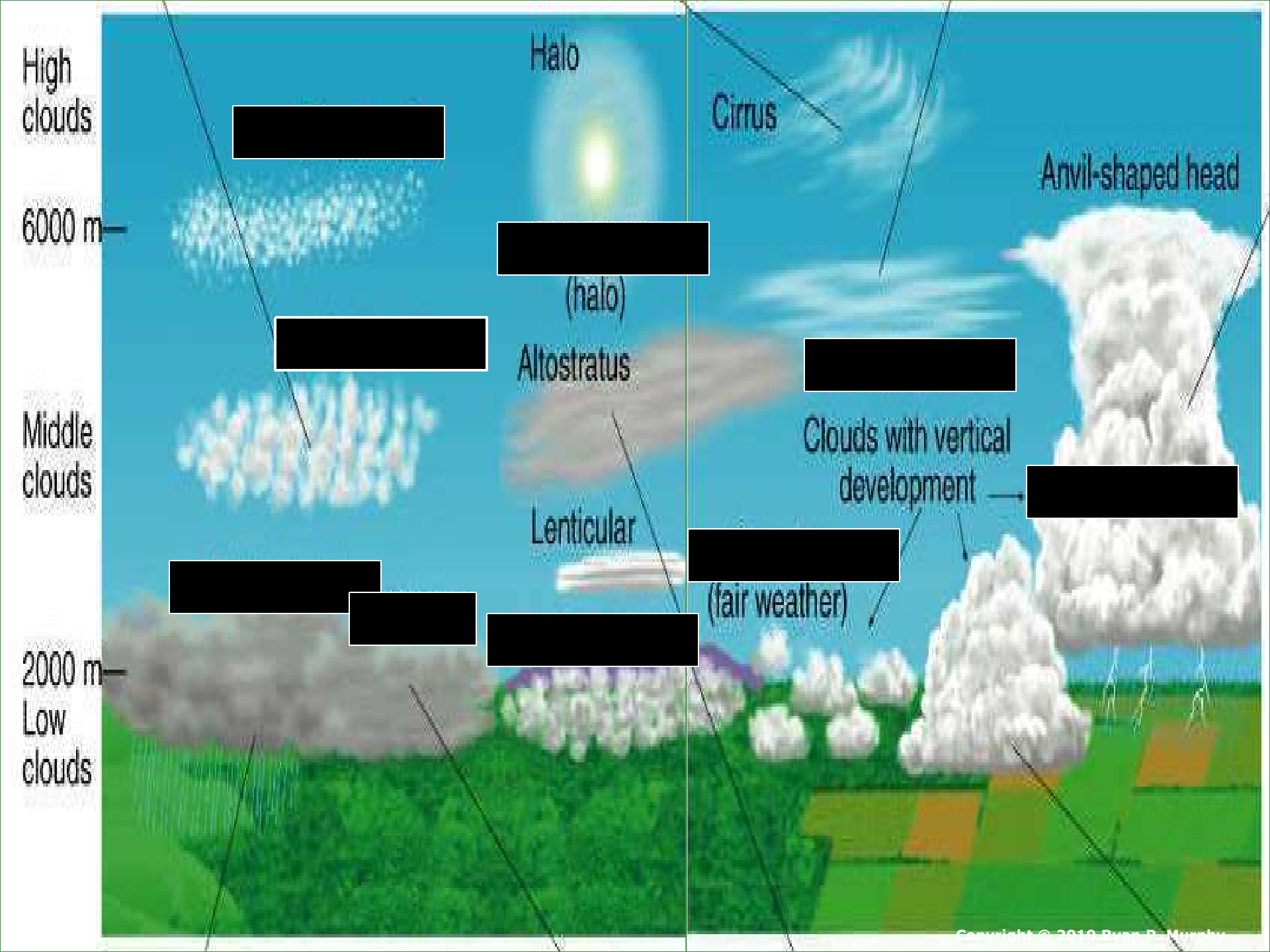


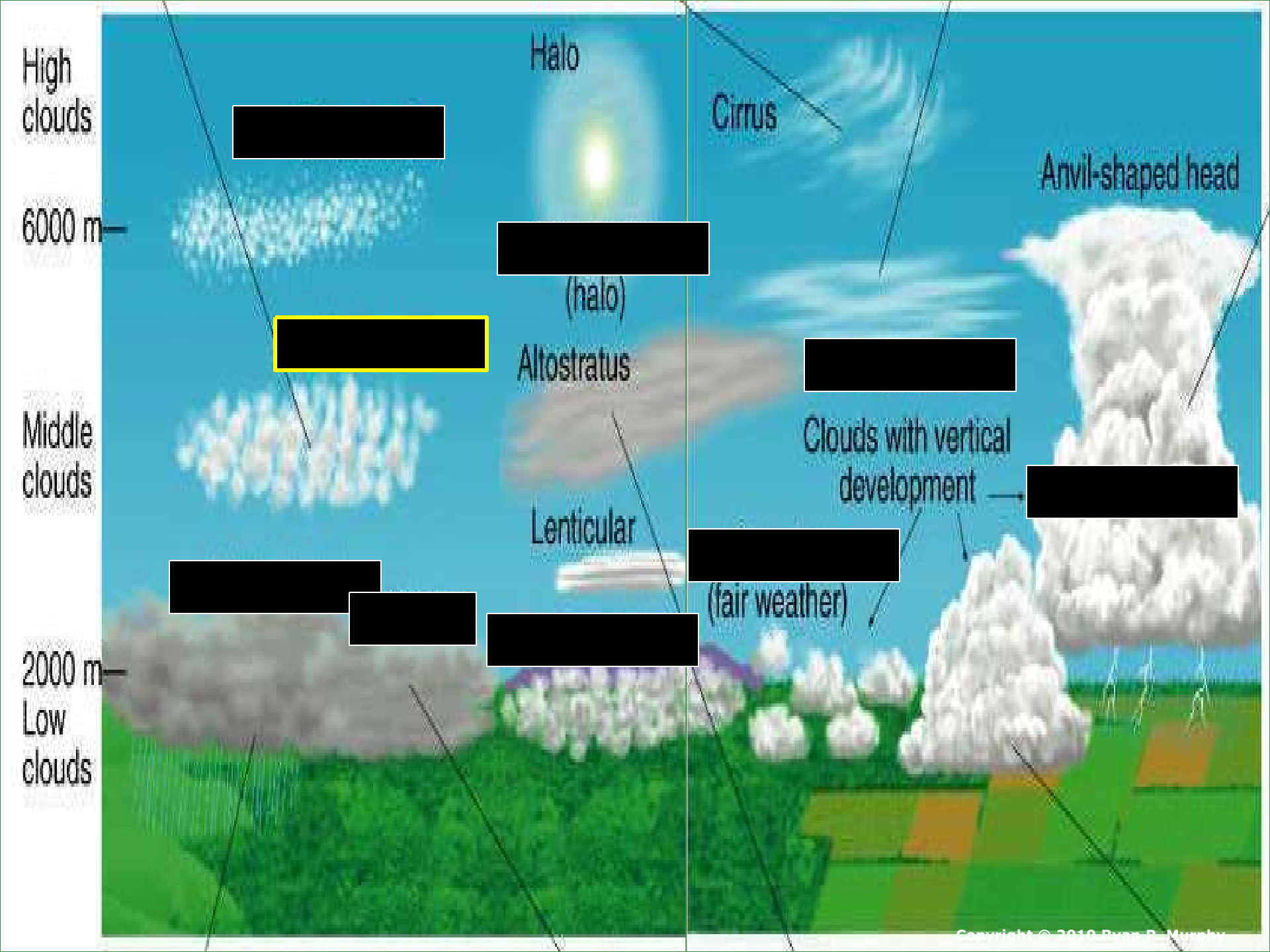


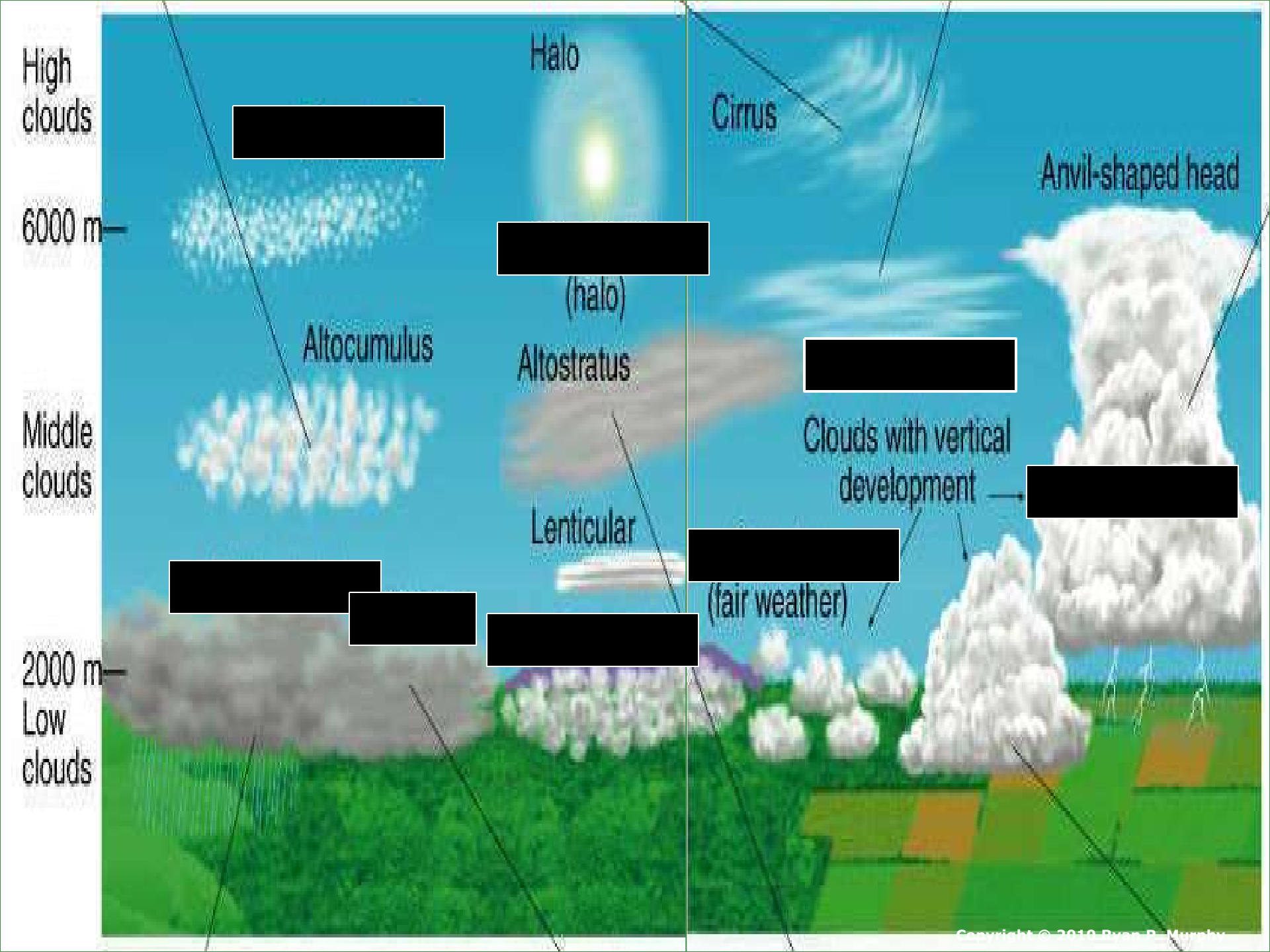


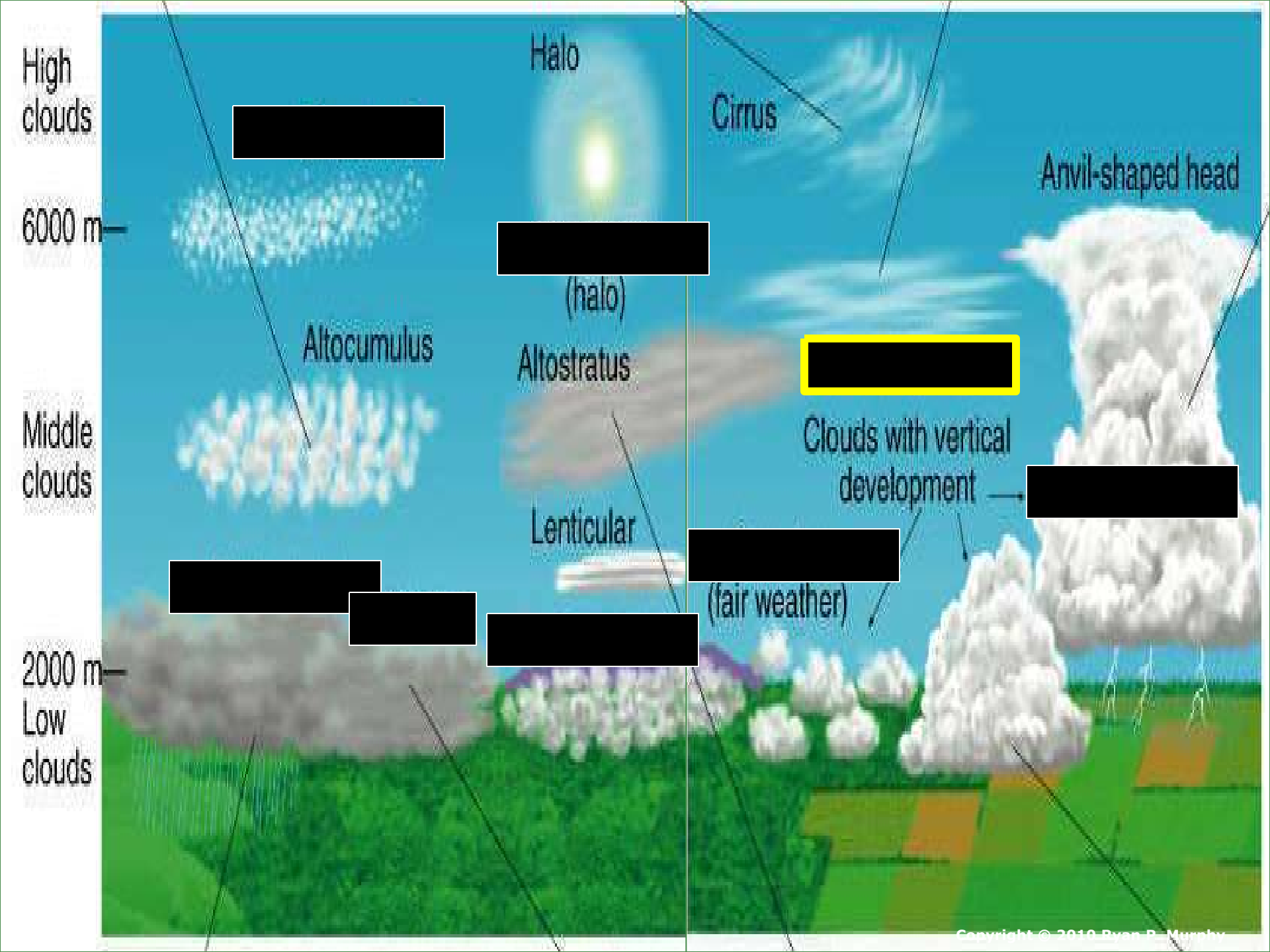







High clouds
6000 m
Middle clouds
2000 m
Low clouds
Halo
Cirrus
Anvil-shaped head
(halo)
Altostratus
Clouds with vertical development
Lenticular
(fair weather)
[redacted]
Copyright © 2010 Ryan P. Murphy

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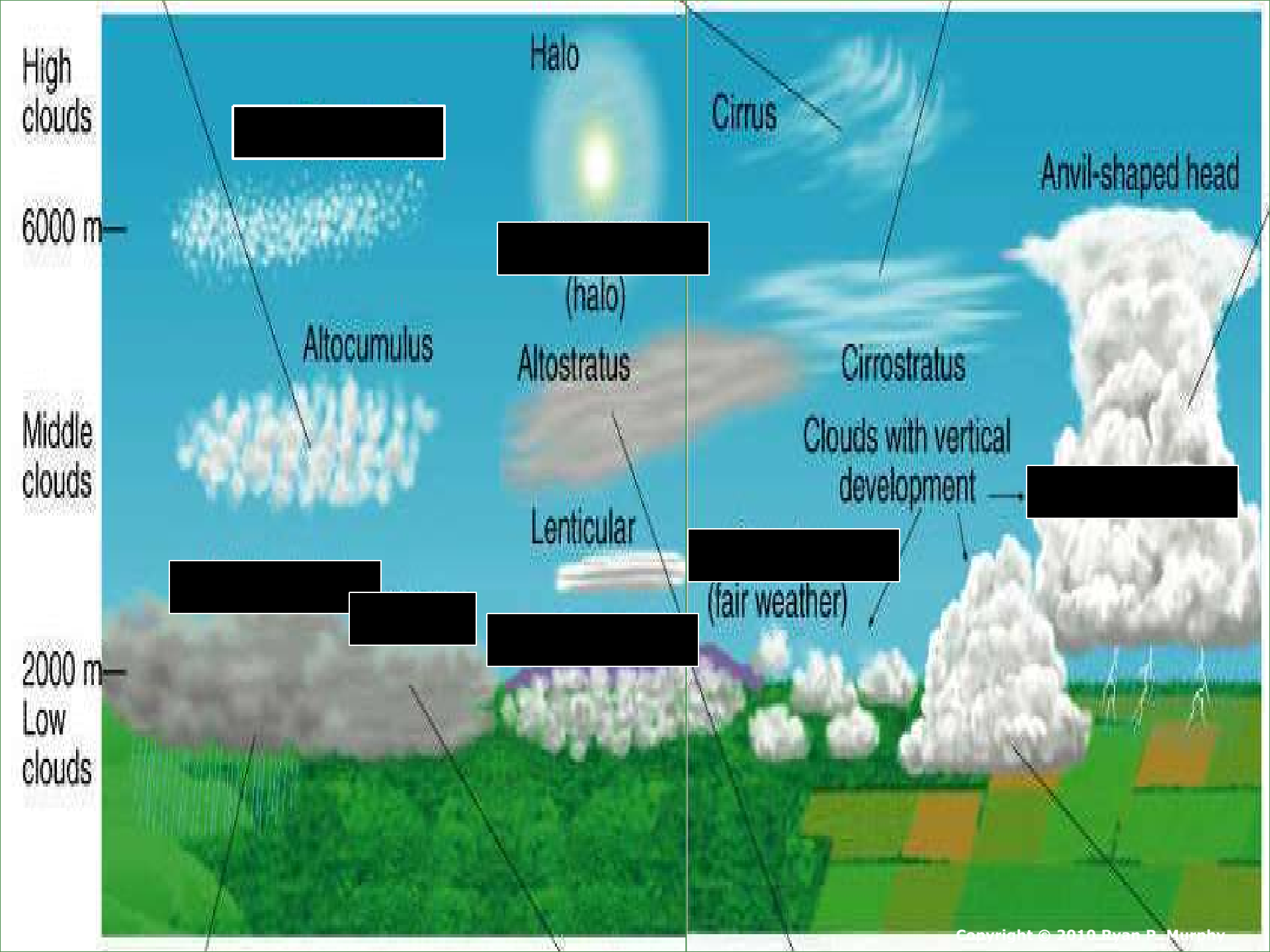

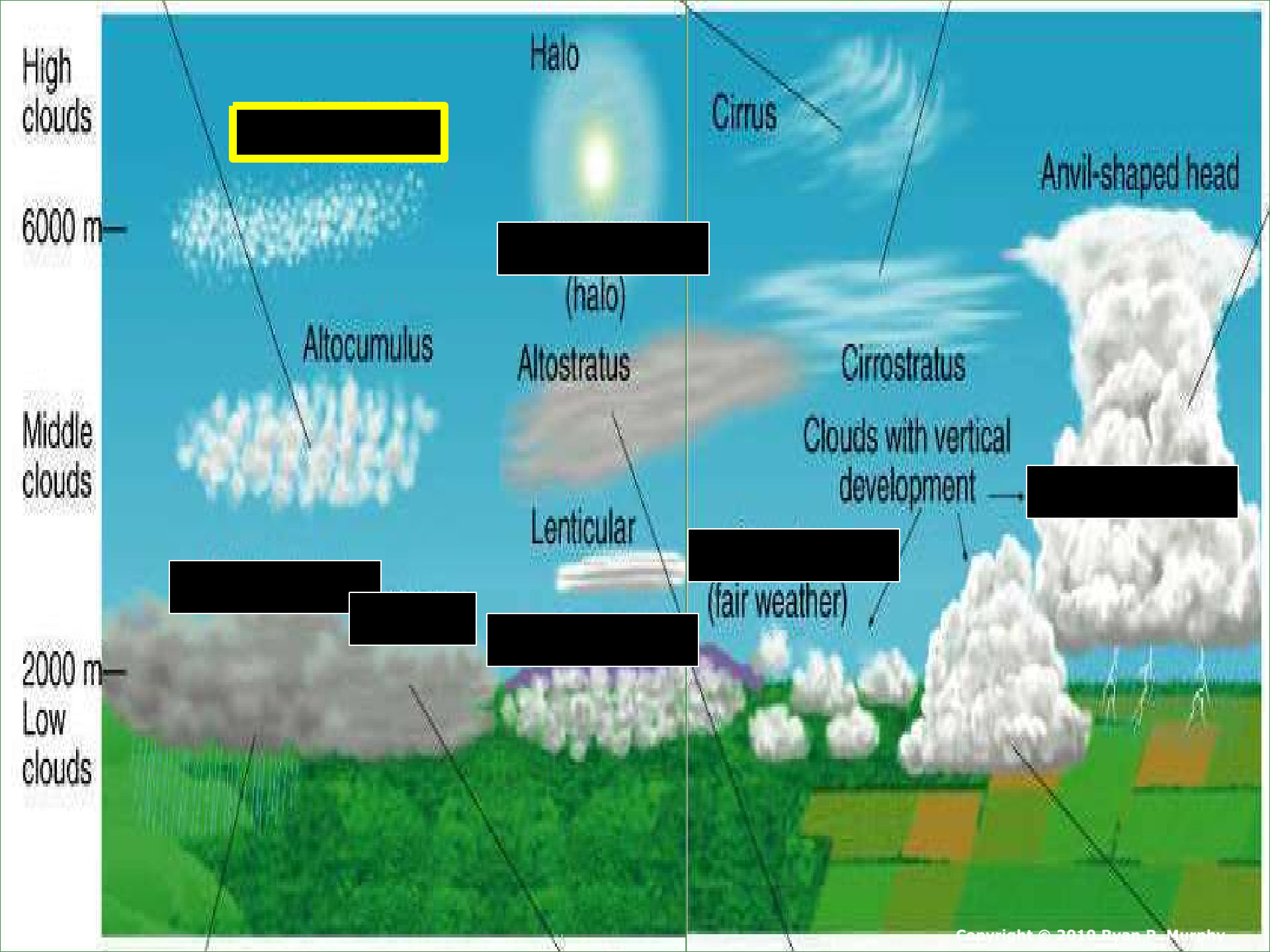

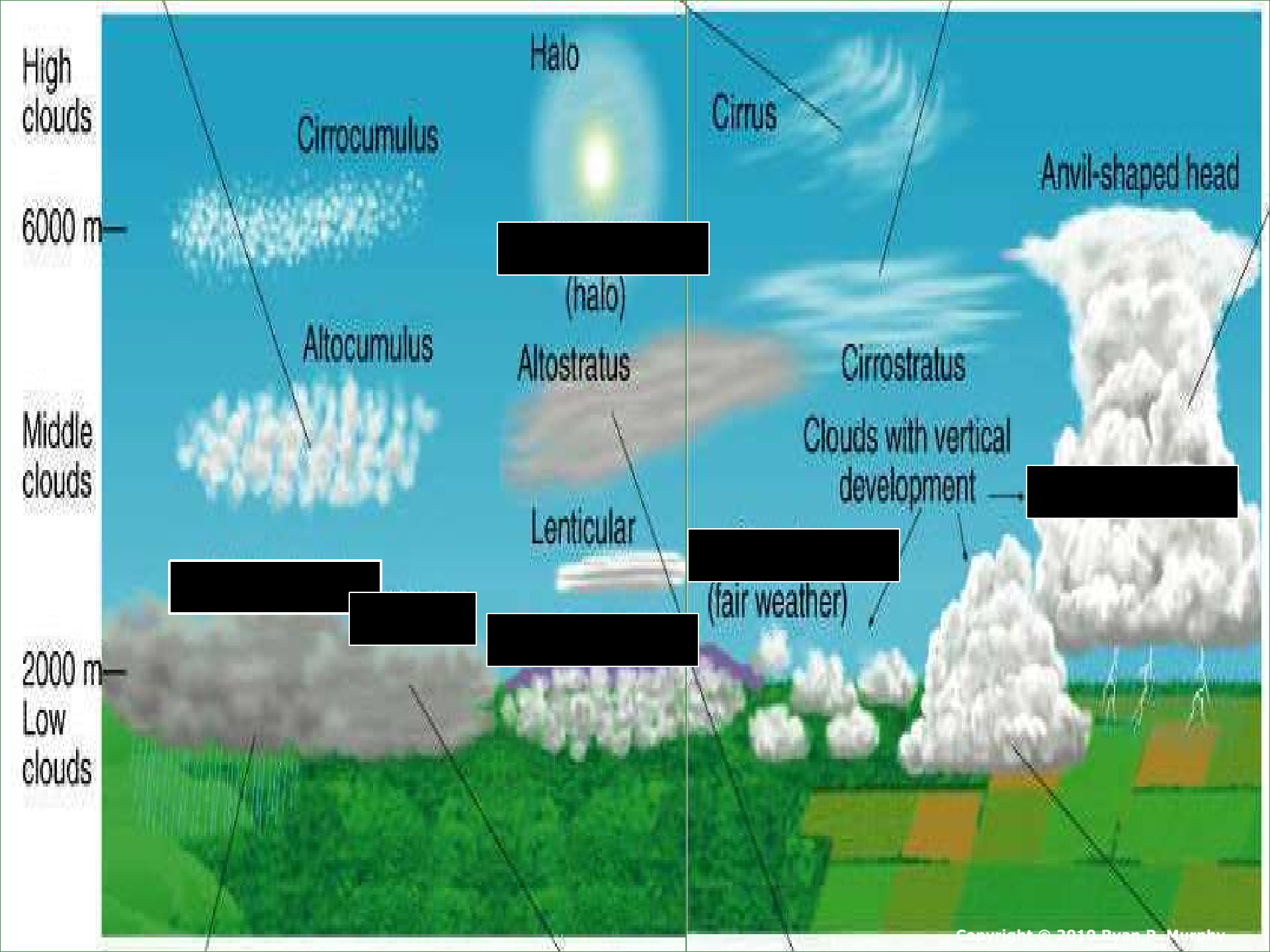

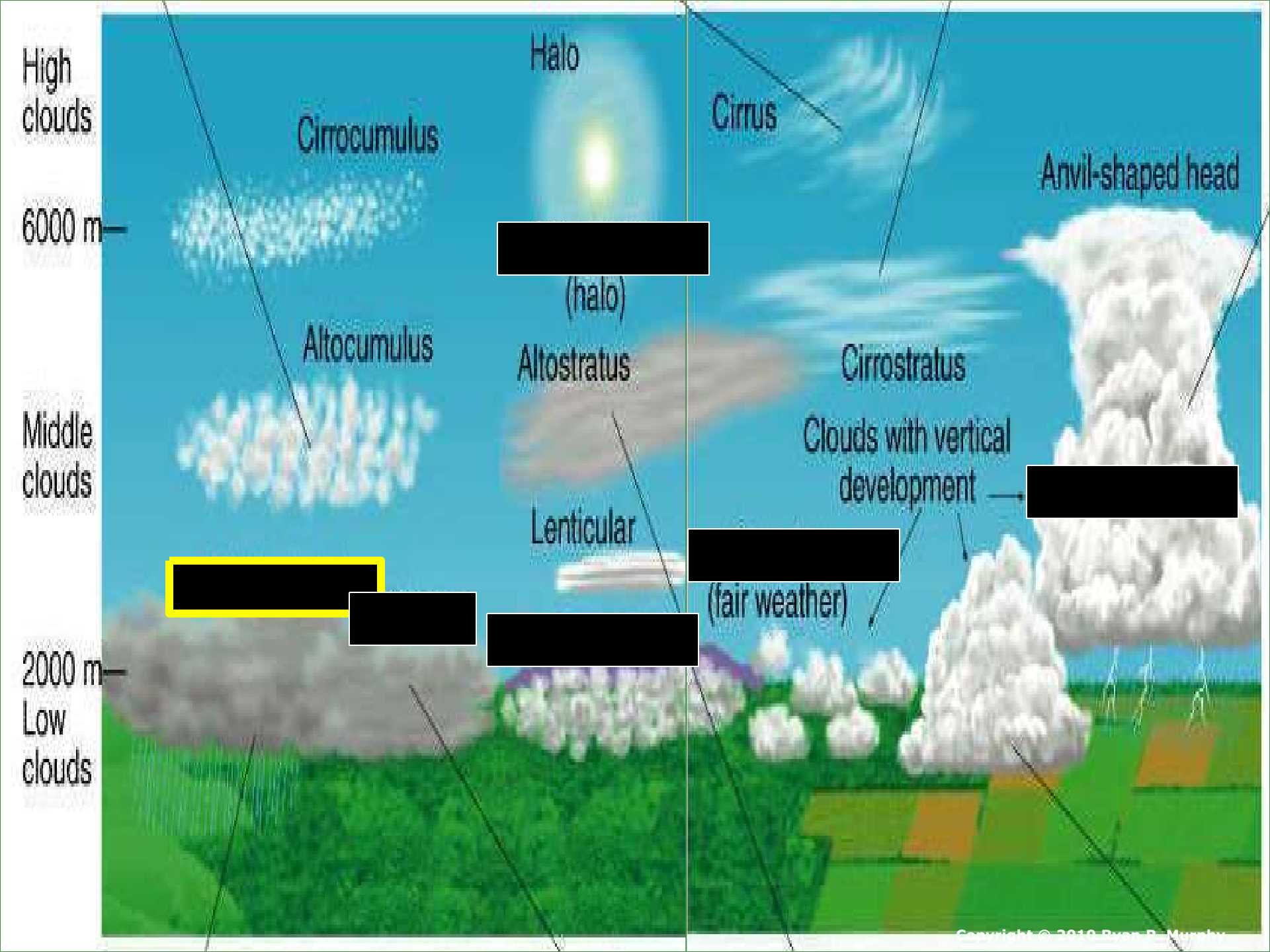

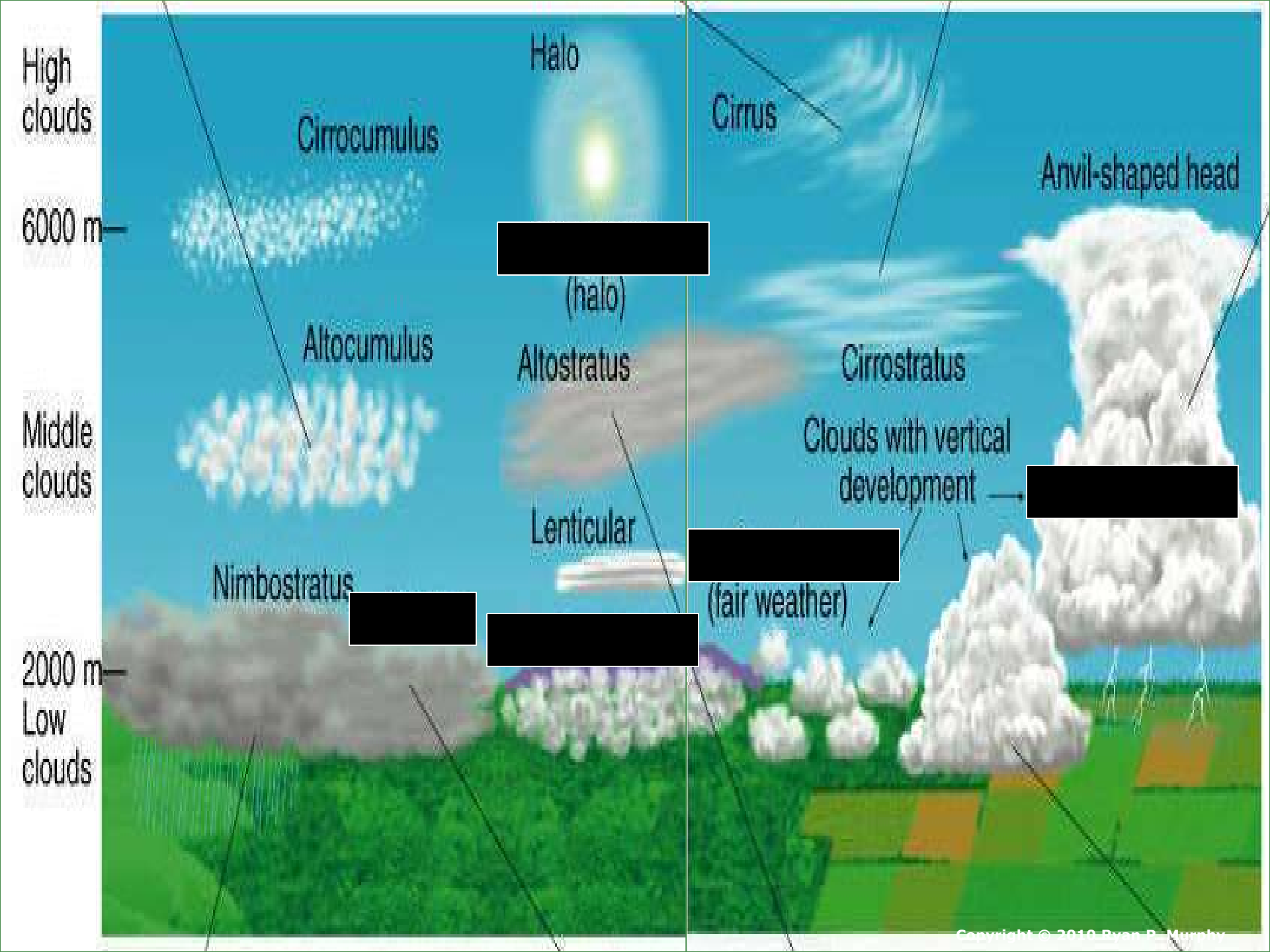

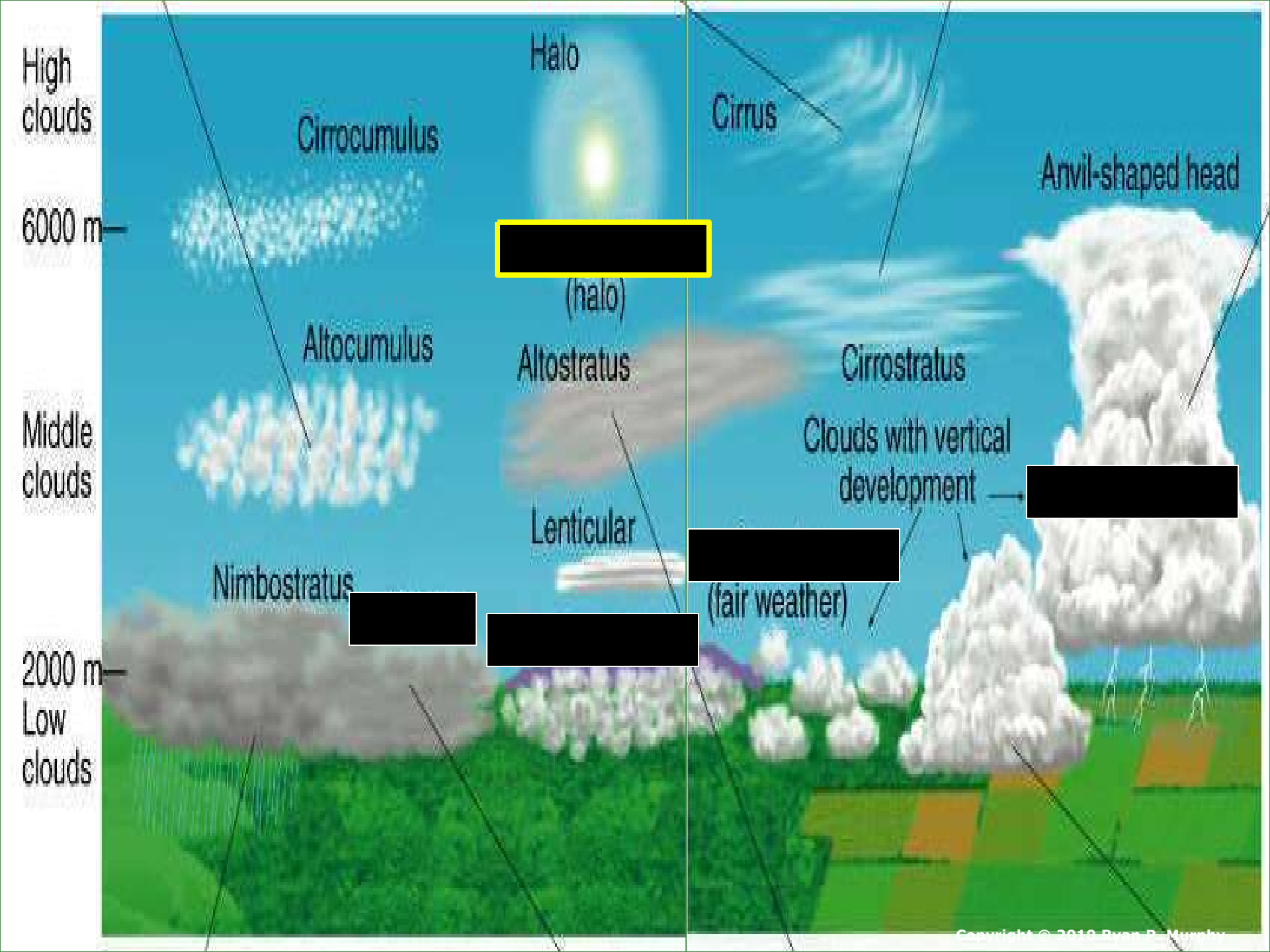

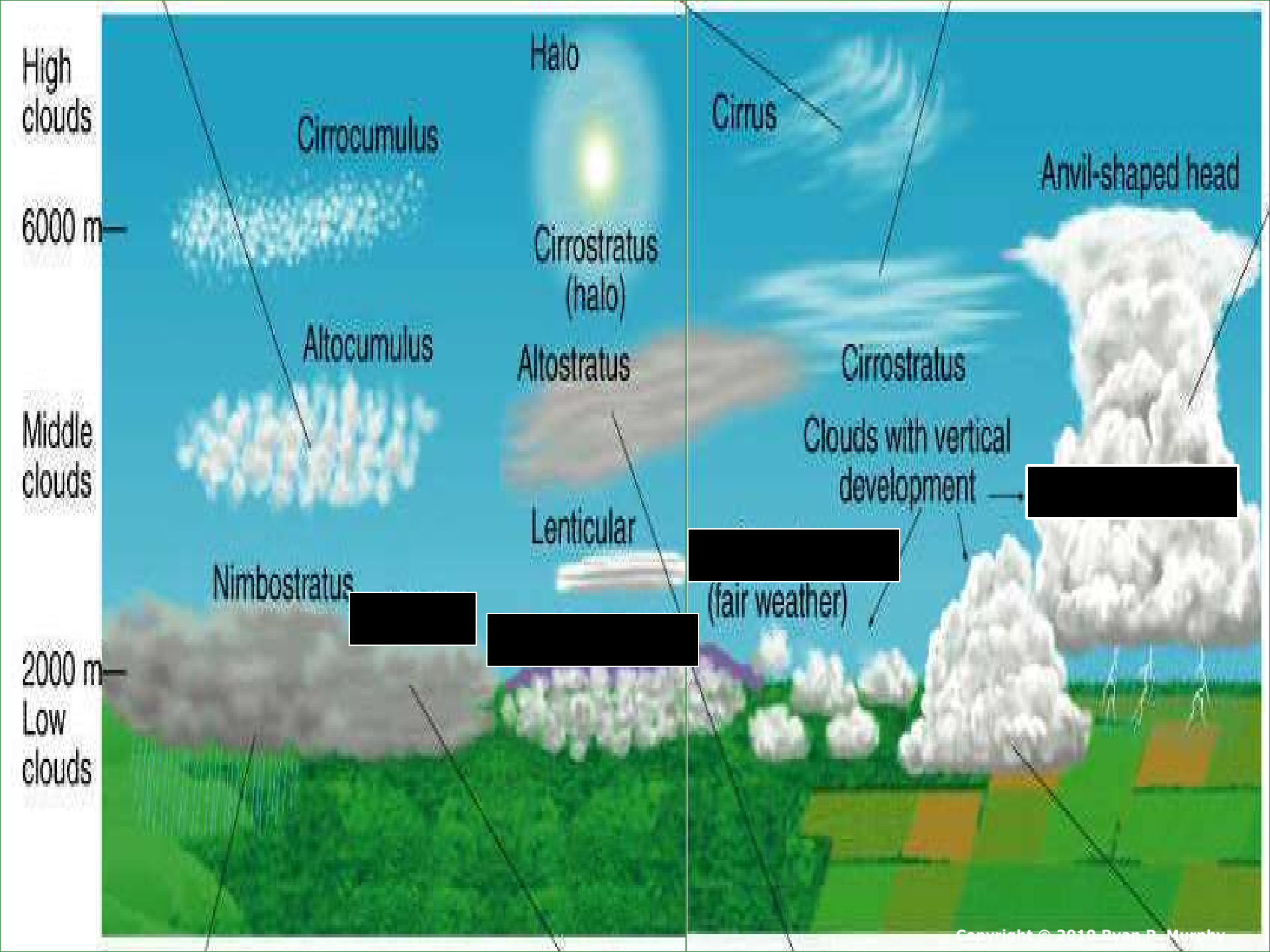

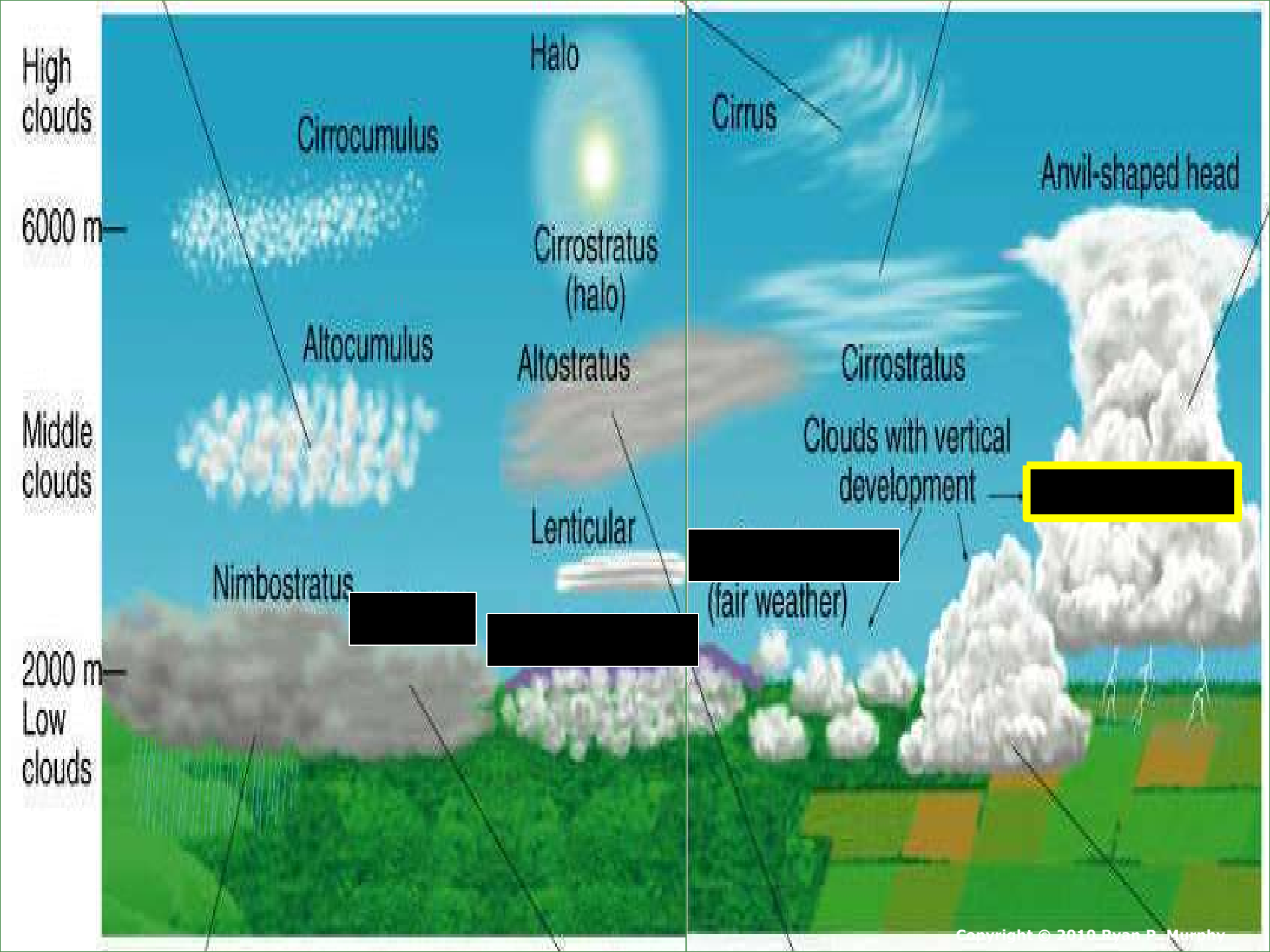

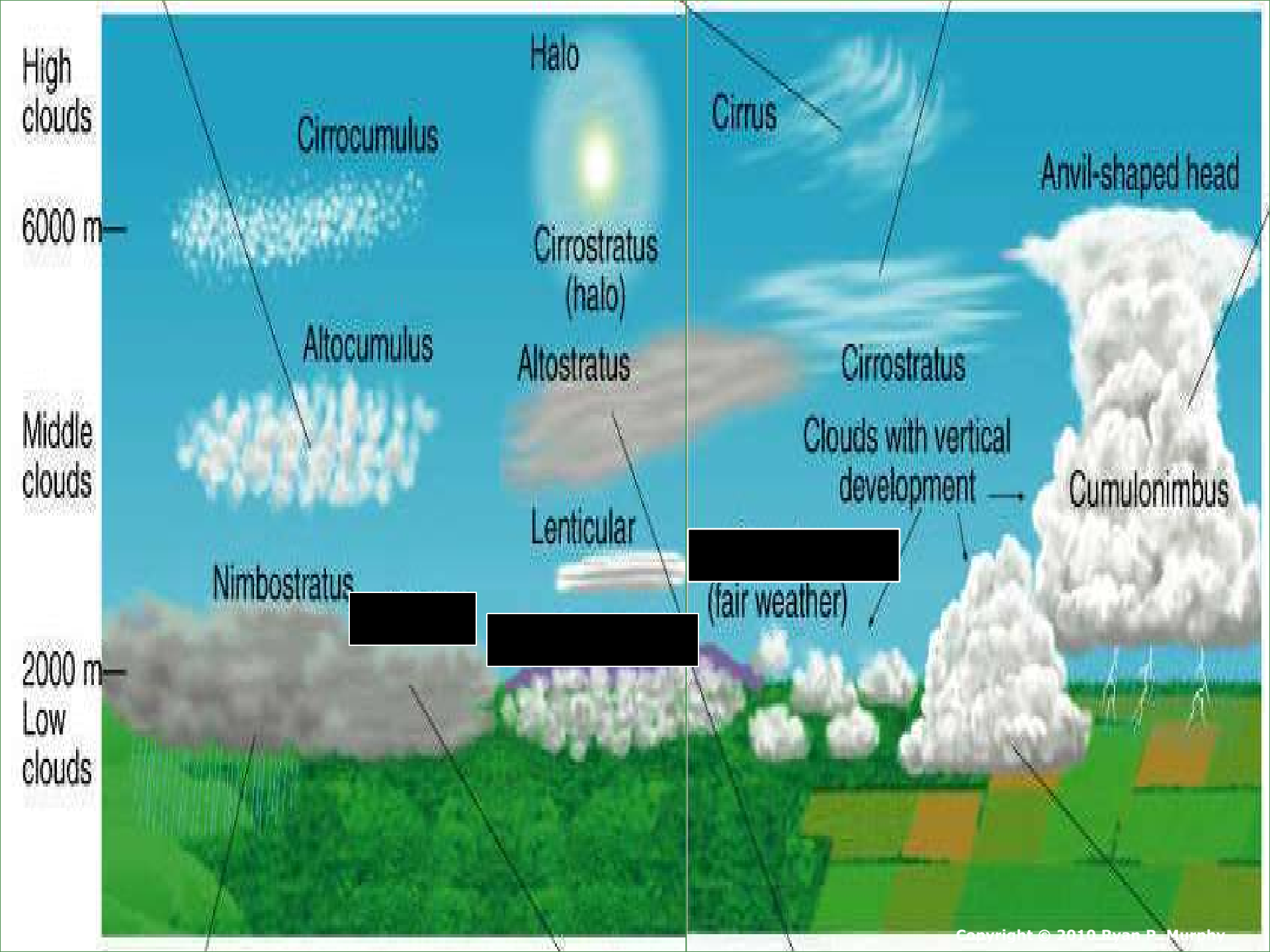

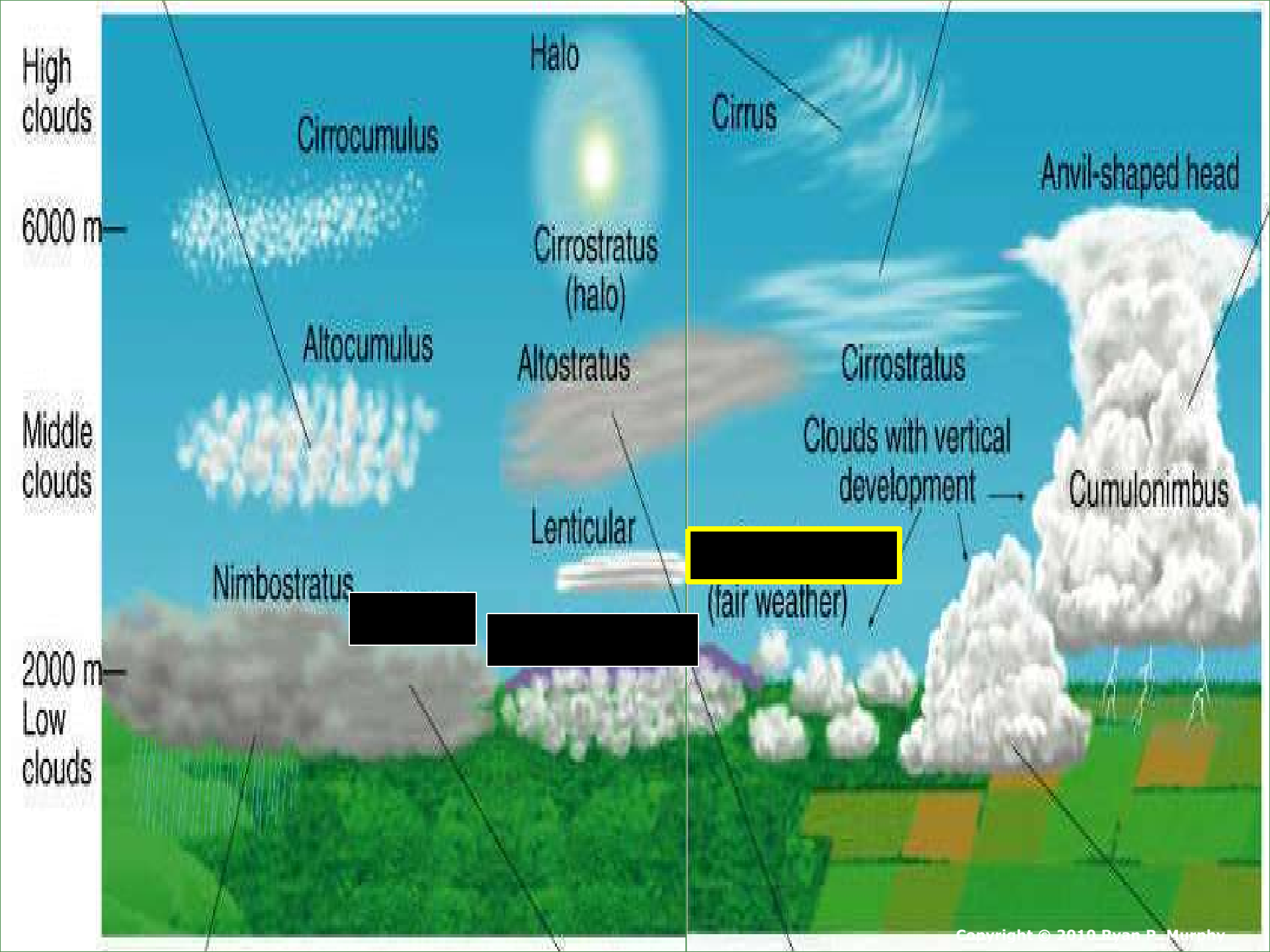

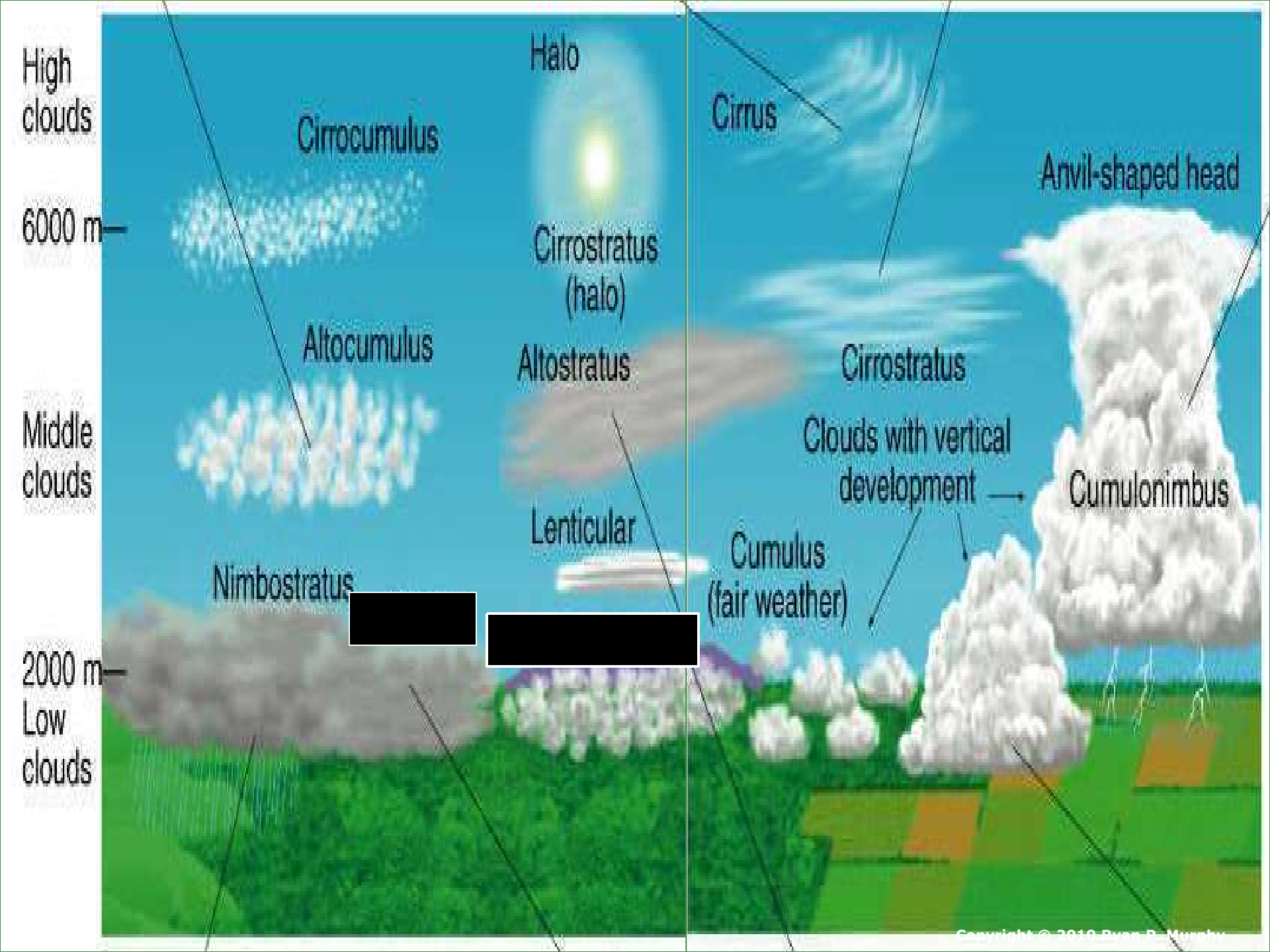

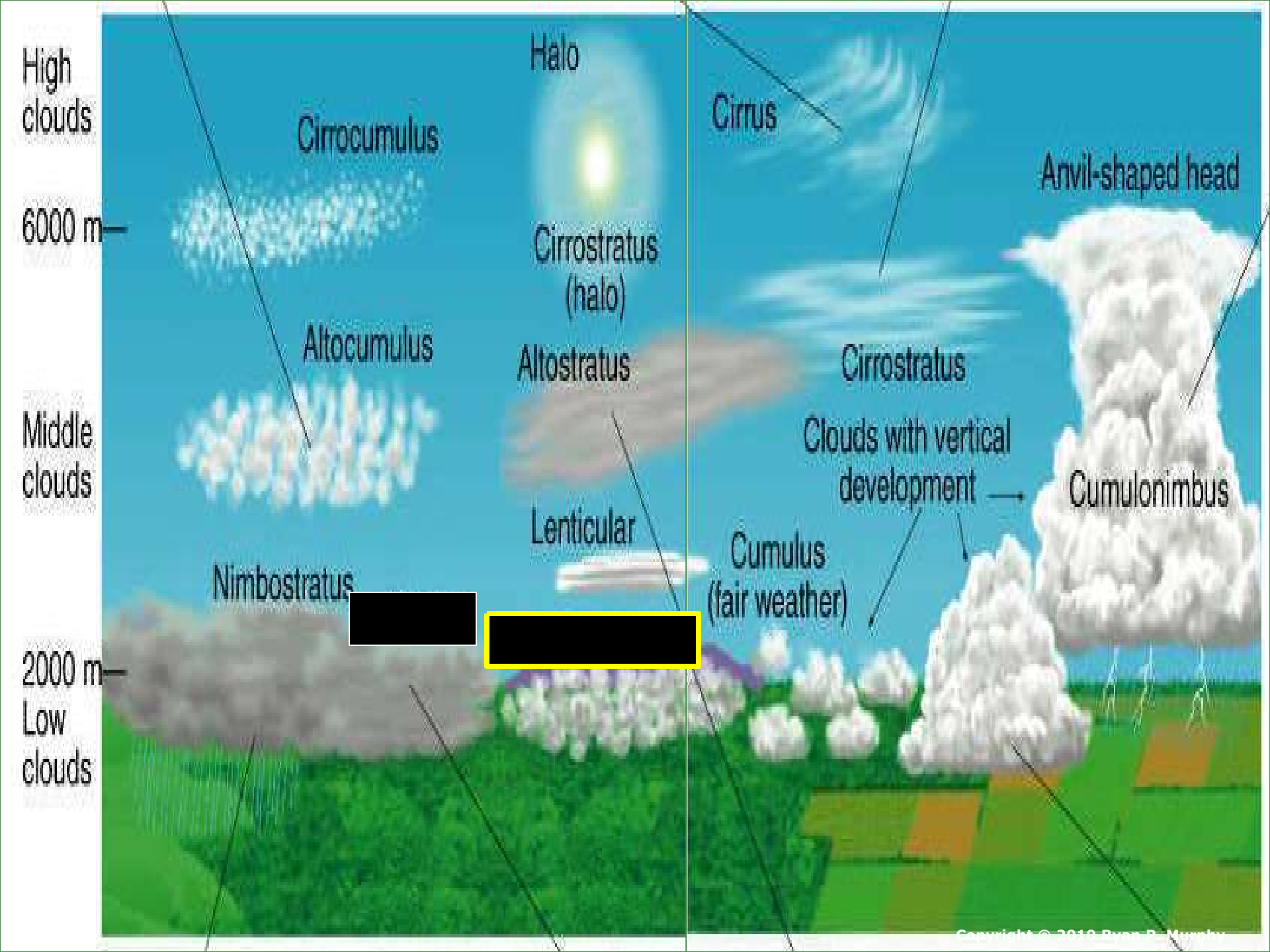

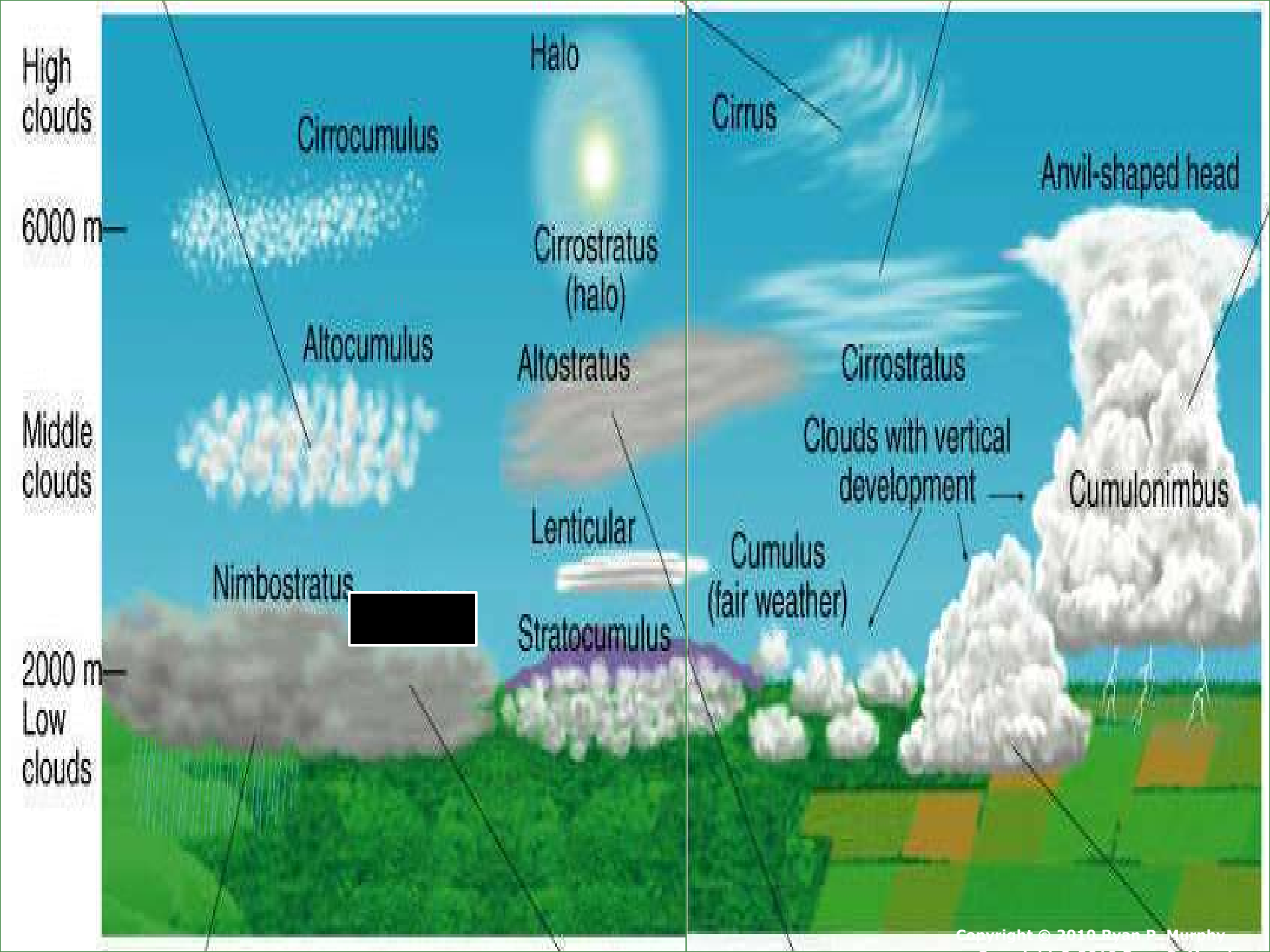

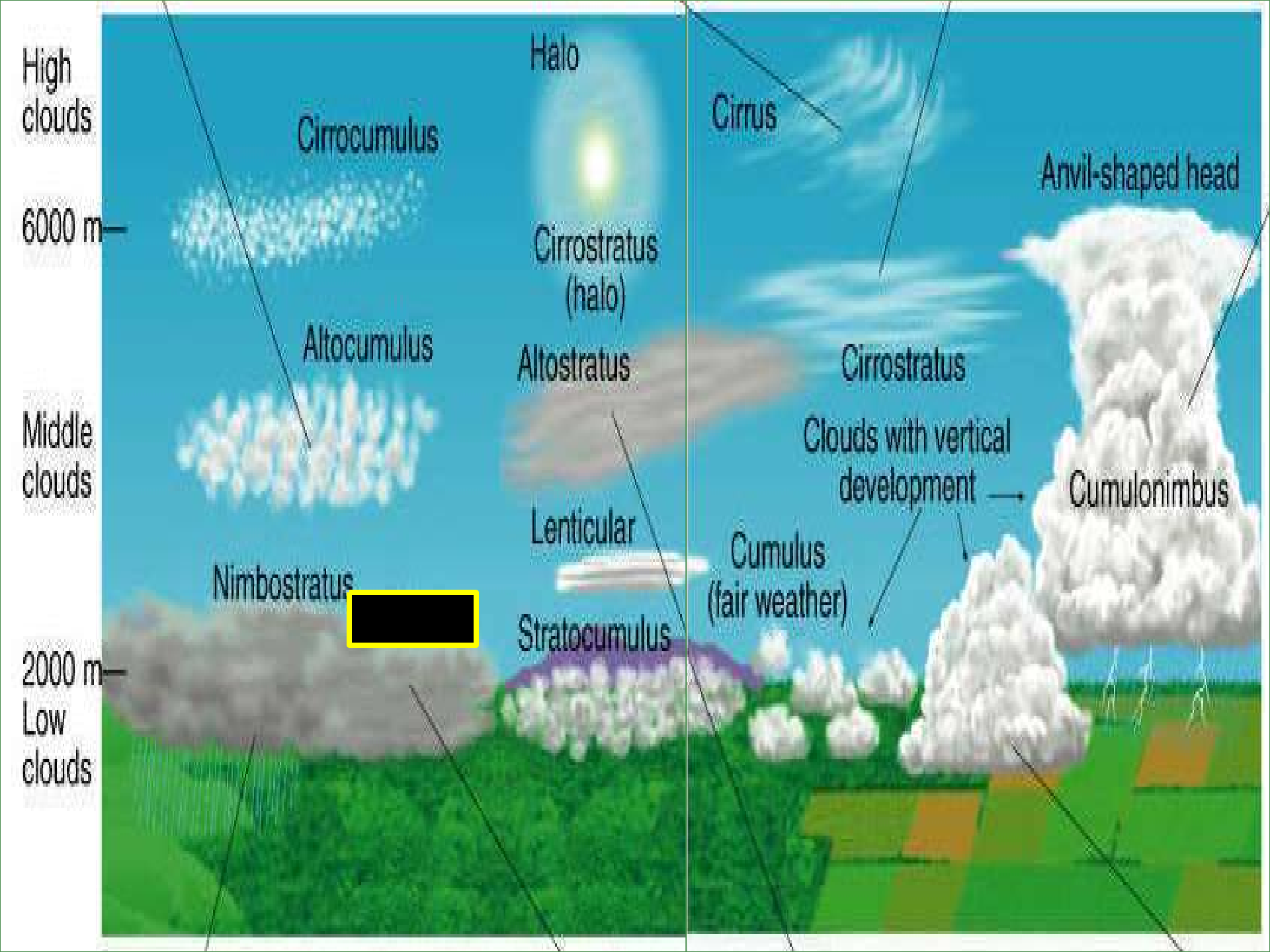
High clouds
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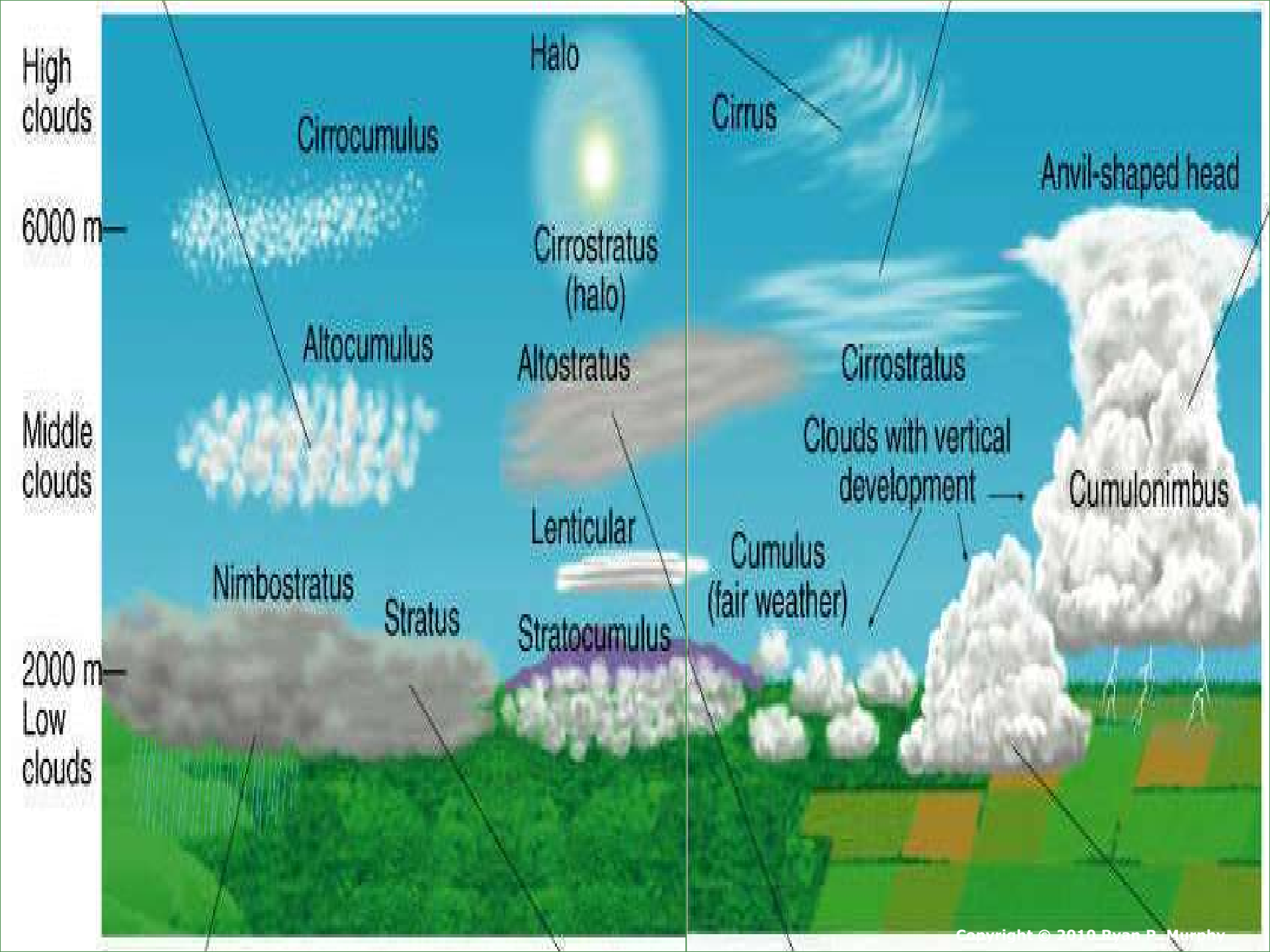
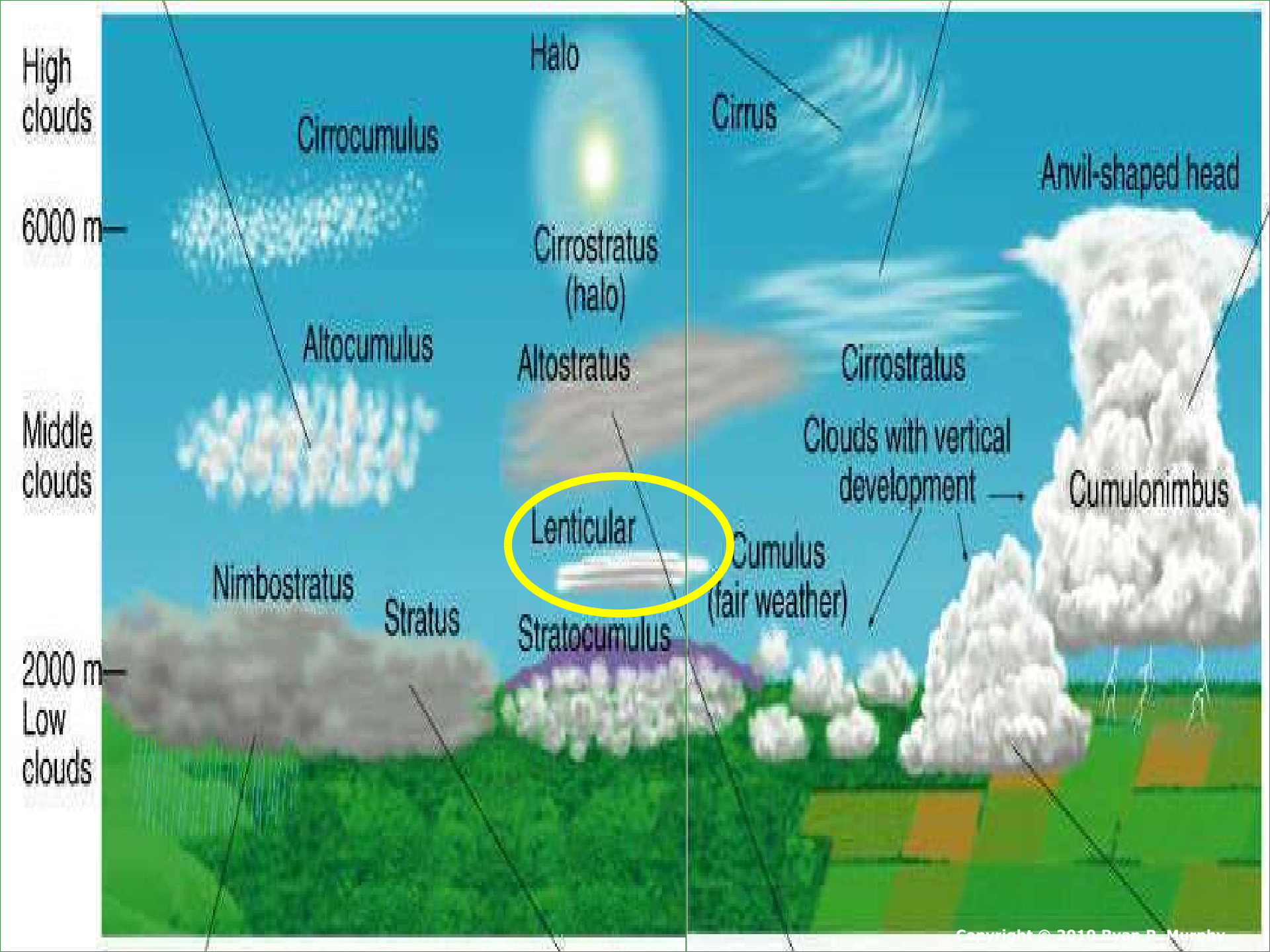
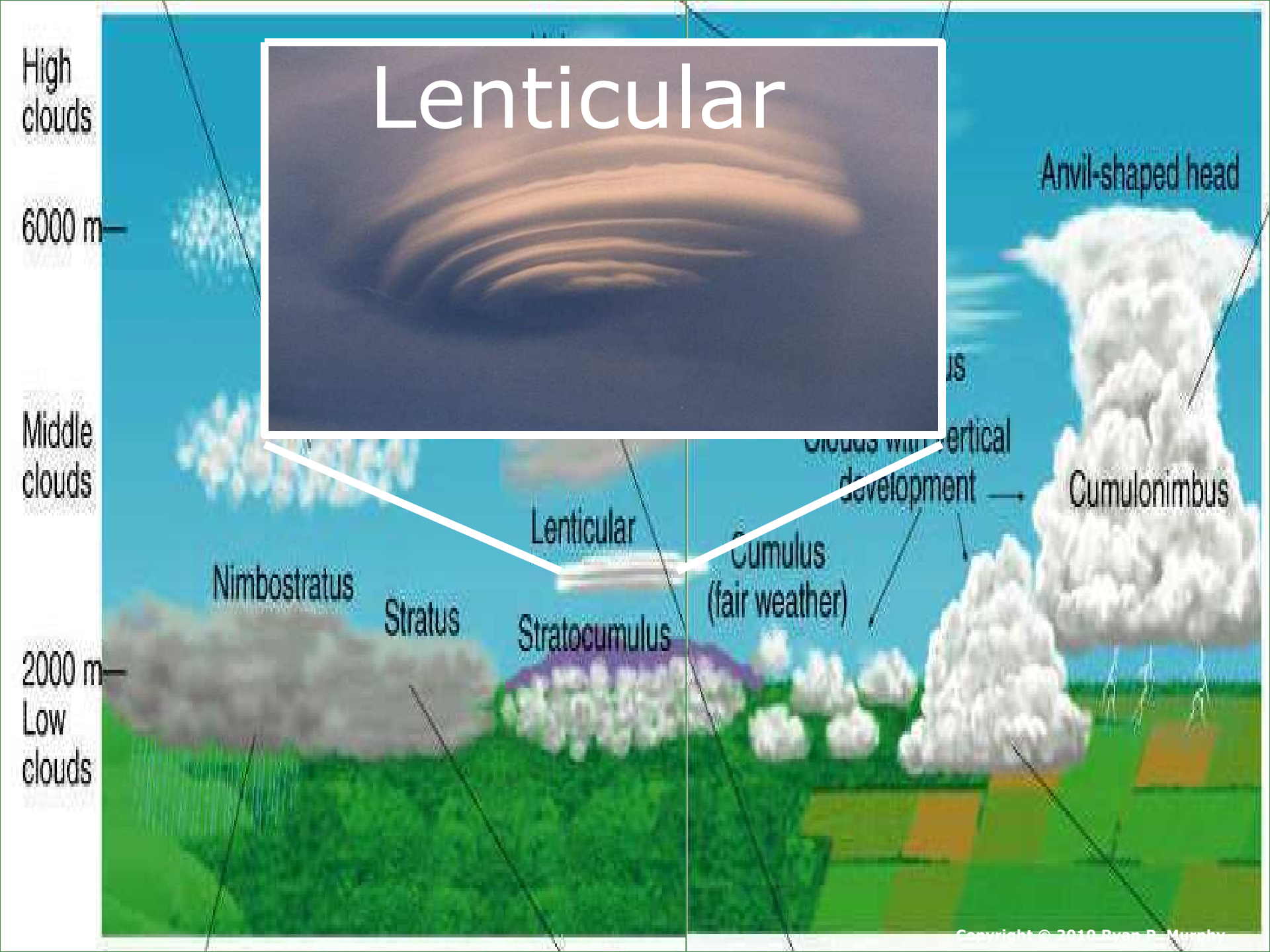
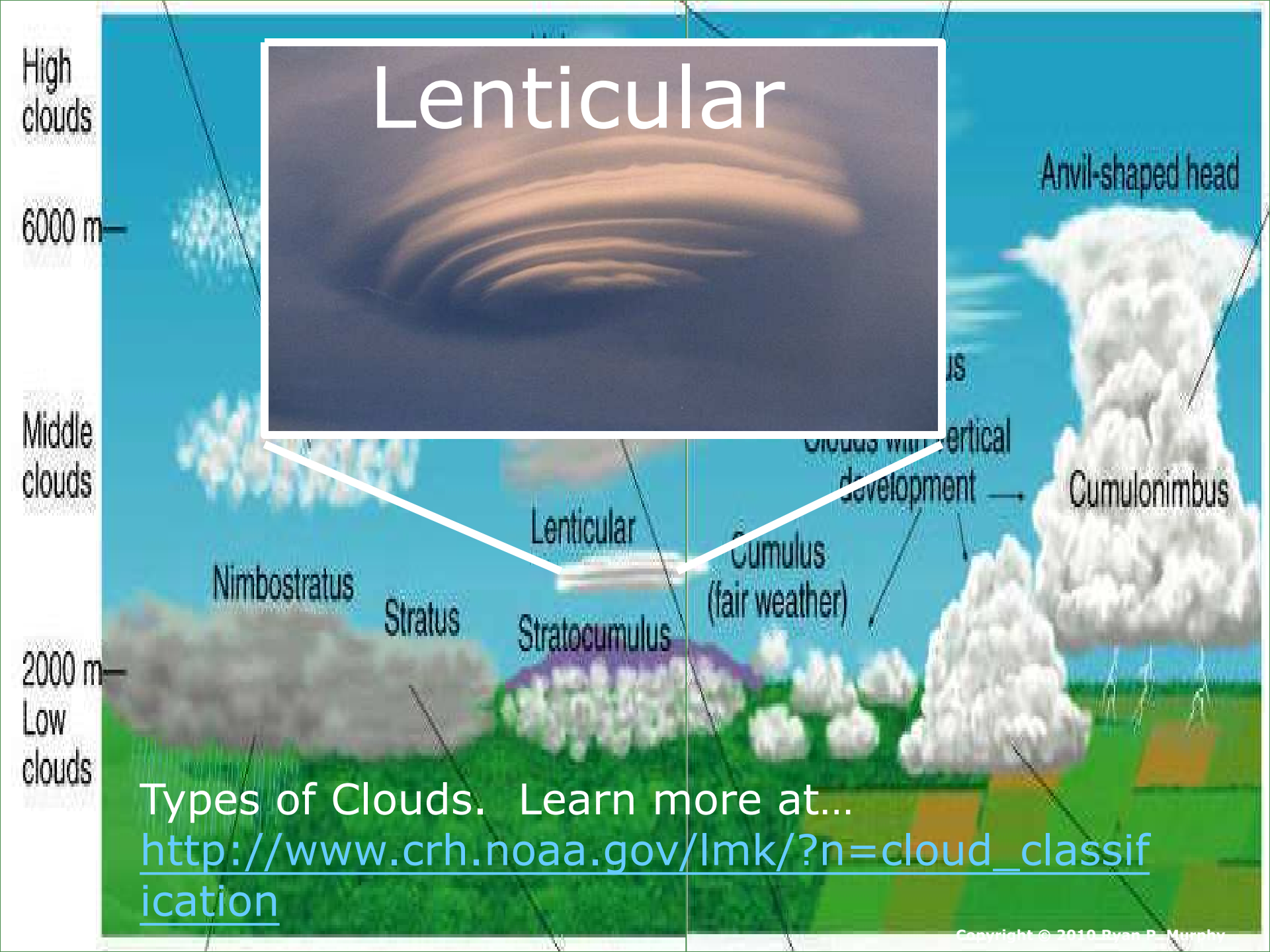
Halo
Cirrocumulus
Cirrostratus (halo)
Altocumulus
Altostratus
Lenticular
Nimbostratus
Stratocumulus
Cirrus
Anvil-shaped head
Cirrostratus
Clouds with vertical development
Cumulonimbus
Cumulus (fair weather)



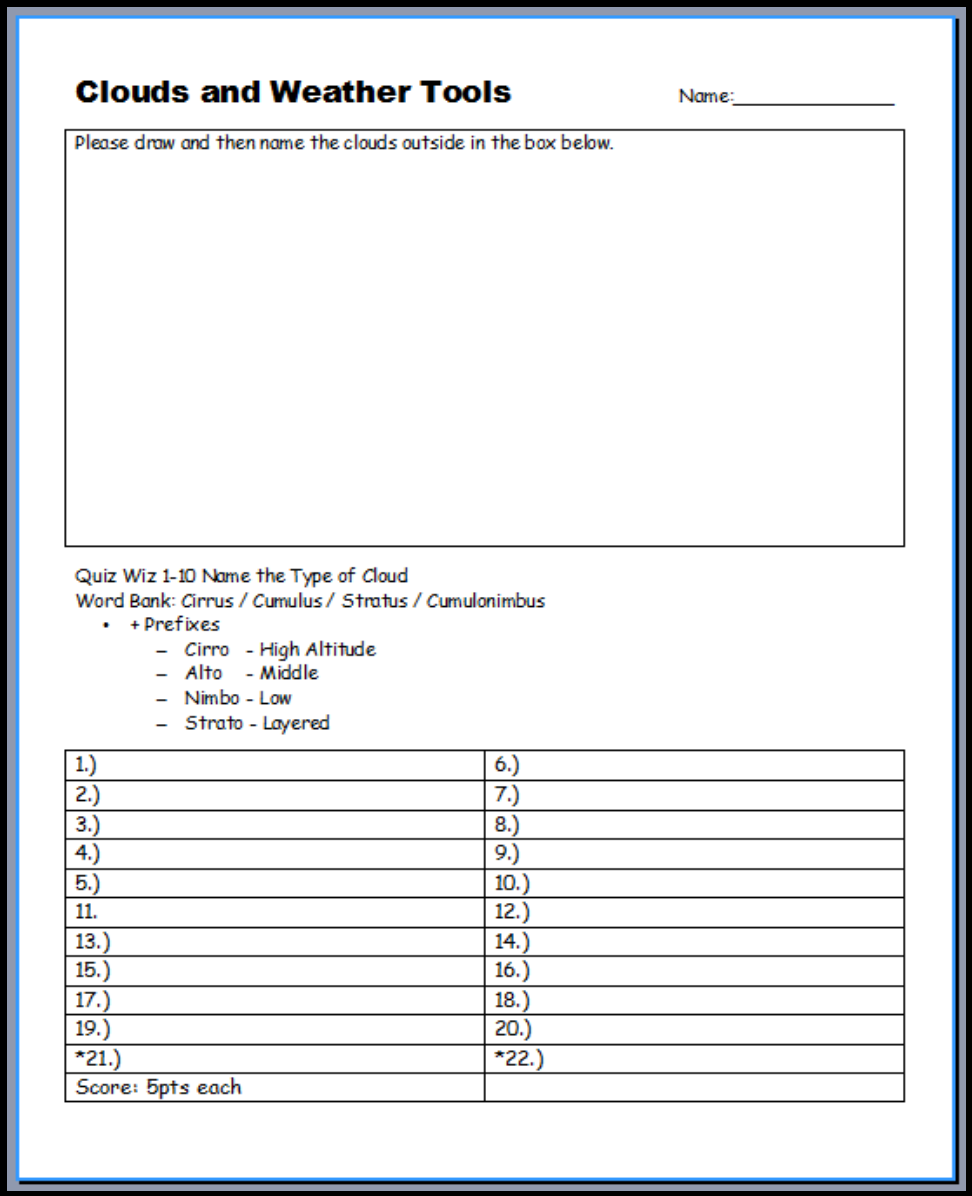



Lenticular
High clouds
6000 m
Middle clouds
2000 m
Low clouds
Anvil-shaped head
Cumulonimbus
Lenticular
Nimbostratus
Stratus
Stratocumulus
Cumulus (fair weather)



Types of Clouds. Learn more at…
http://www.crh.noaa.gov/lmk/?n=cloud_classification

- Clouds Available Sheet and Quiz Wiz



Clouds and Weather Tools Name:_____

Please draw and then name the clouds outside in the box below.

Quiz Wiz 1-10 Name the Type of Cloud
Word Bank: Cirrus / Cumulus / Stratus / Cumulonimbus

- + Prefixes
  - Cirro - High Altitude
  - Alto - Middle
  - Nimbo - Low
  - Strato - Layered

1.)	6.)
2.)	7.)
3.)	8.)
4.)	9.)
5.)	10.)
11.	12.)
13.)	14.)
15.)	16.)
17.)	18.)
19.)	20.)
*21.)	*22.)
Score: 5pts each	

- Activity! Cloud Identification.
  - Please investigate the cloud formations outside.
  - Record as many cloud types as possible with words and sketches.

- Activity! Cloud Matching Memory Game.
  - Teacher vs. Students?
  - Each match gives your team a point.
  - http://calipsooutreach.hamptonu.edu/clouds.swf

- Activity! Quiz Wiz 1-20
- Cirrus / Cumulus / Stratus / Cumulonimbus
- + Prefixes
  - Cirro - High Altitude
  - Alto - Middle
  - Nimbo - Low
  - Strato - Layered


1 Strato


2


3


4


5


6
stratus

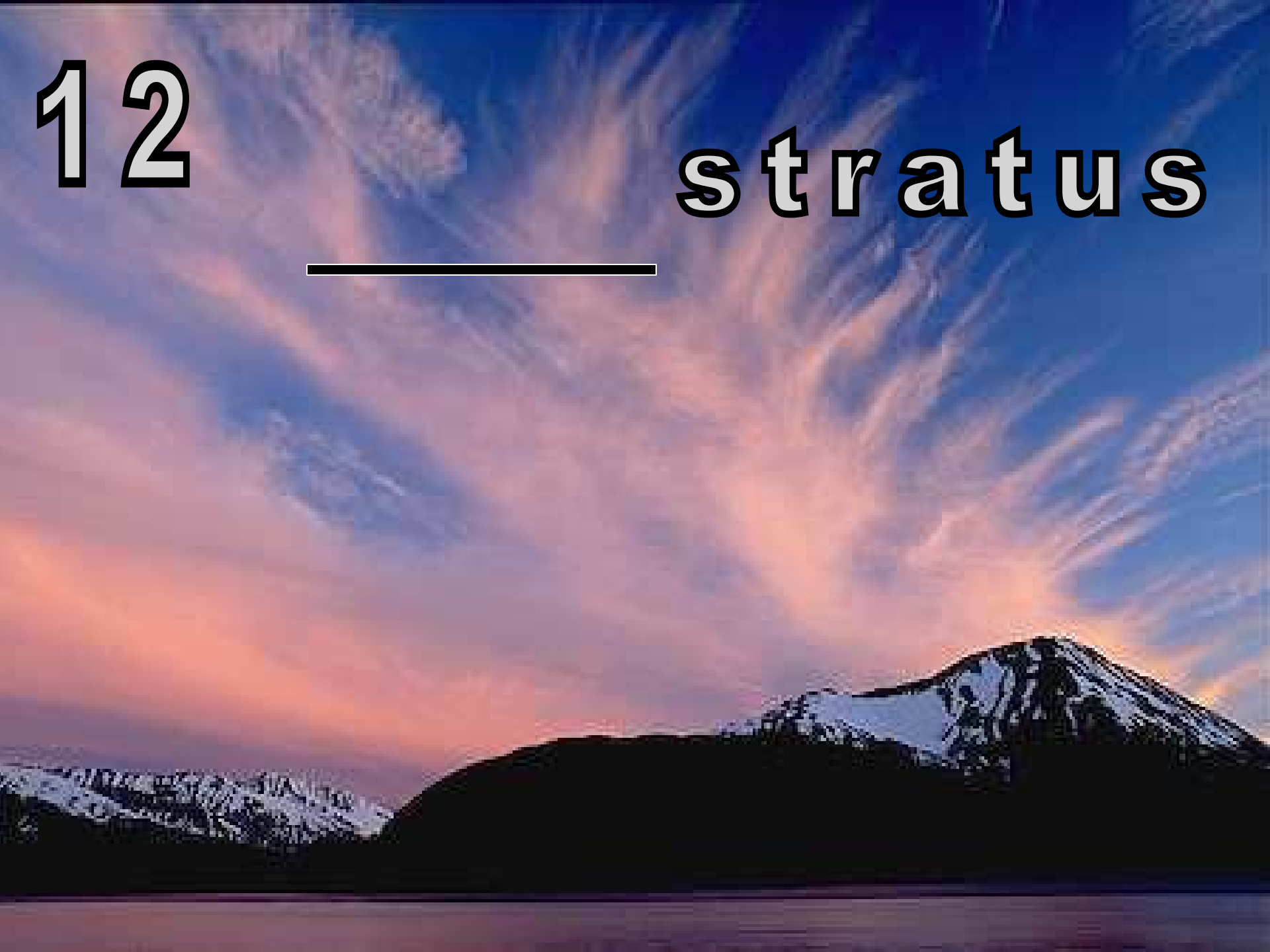

7


8
Nimbo


9
stratus


10
Alto


11
Alto


12
stratus

13

cirro


14


15


16

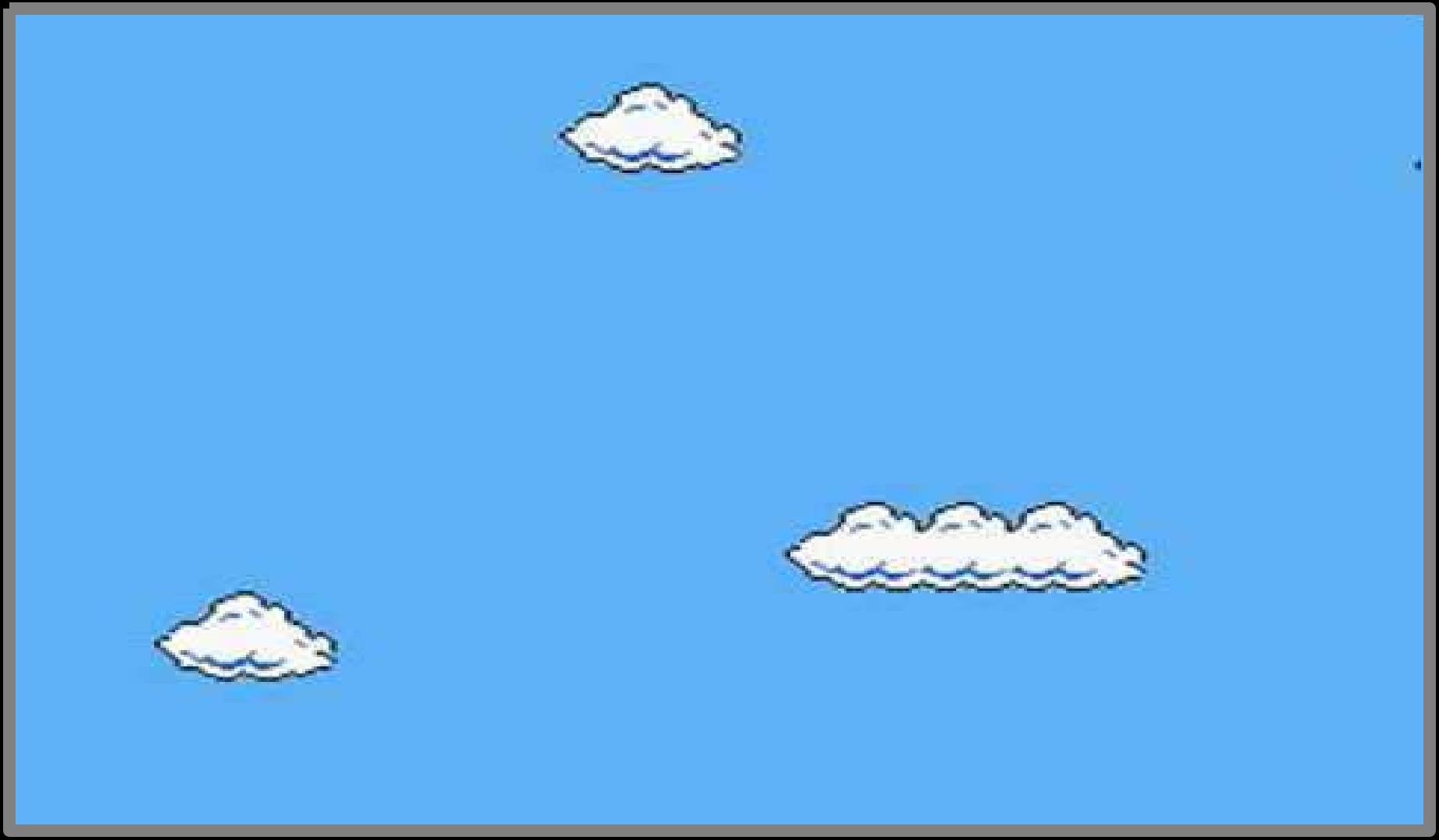

17


18
stratus

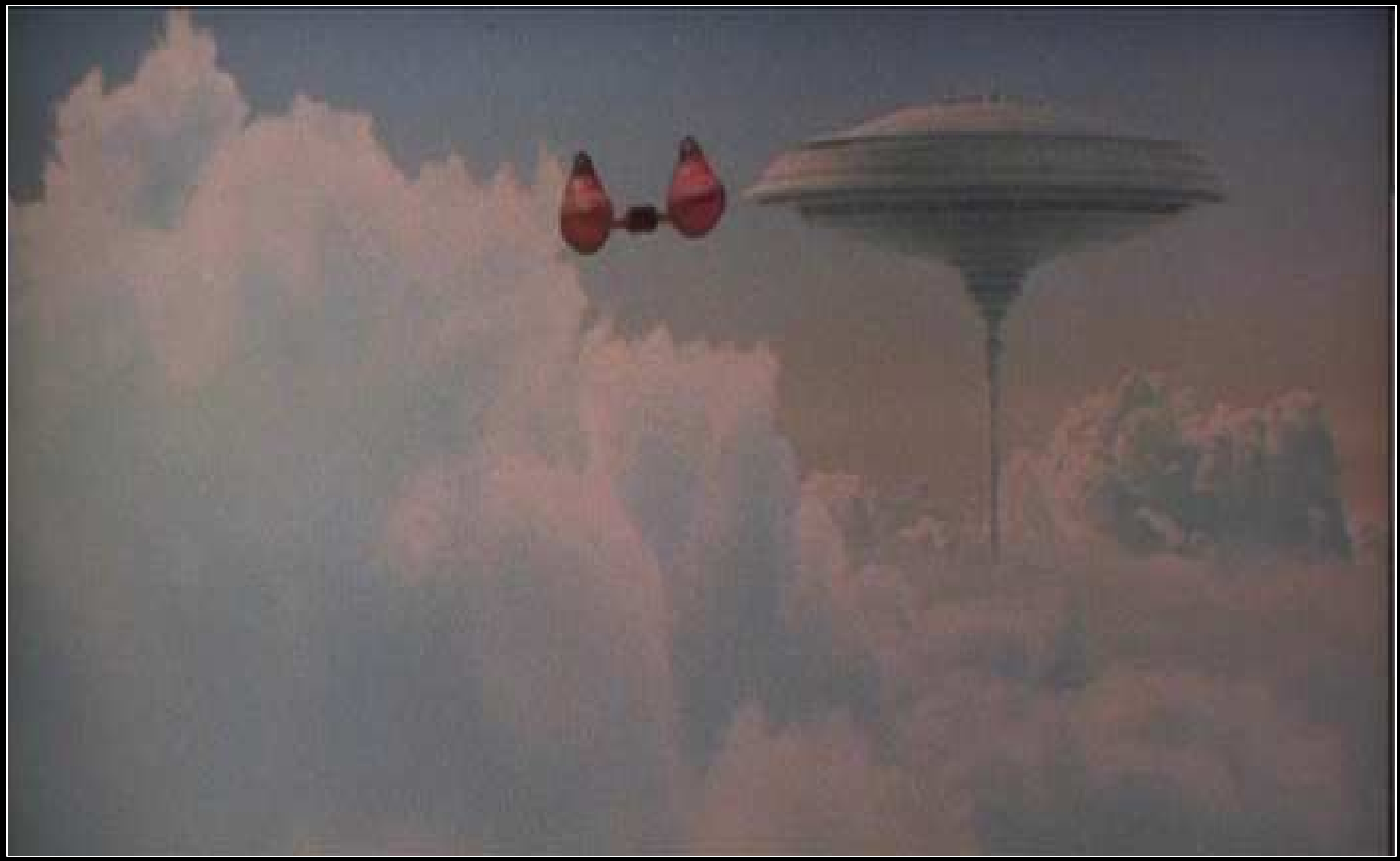

19


20

- *21 (Bonus) In what game will you find these cumulus clouds?



- Bonus #2. What do you know about this picture?



- Answers! Quiz Wiz 1-20, Cirrus, Cumulus, Stratus, - Cirro, Alto, Nimbo, Strato


1 Strato


1 Strato cumulus


2


2
Cirrus


3


3 Cumulus


4


4
Stratus

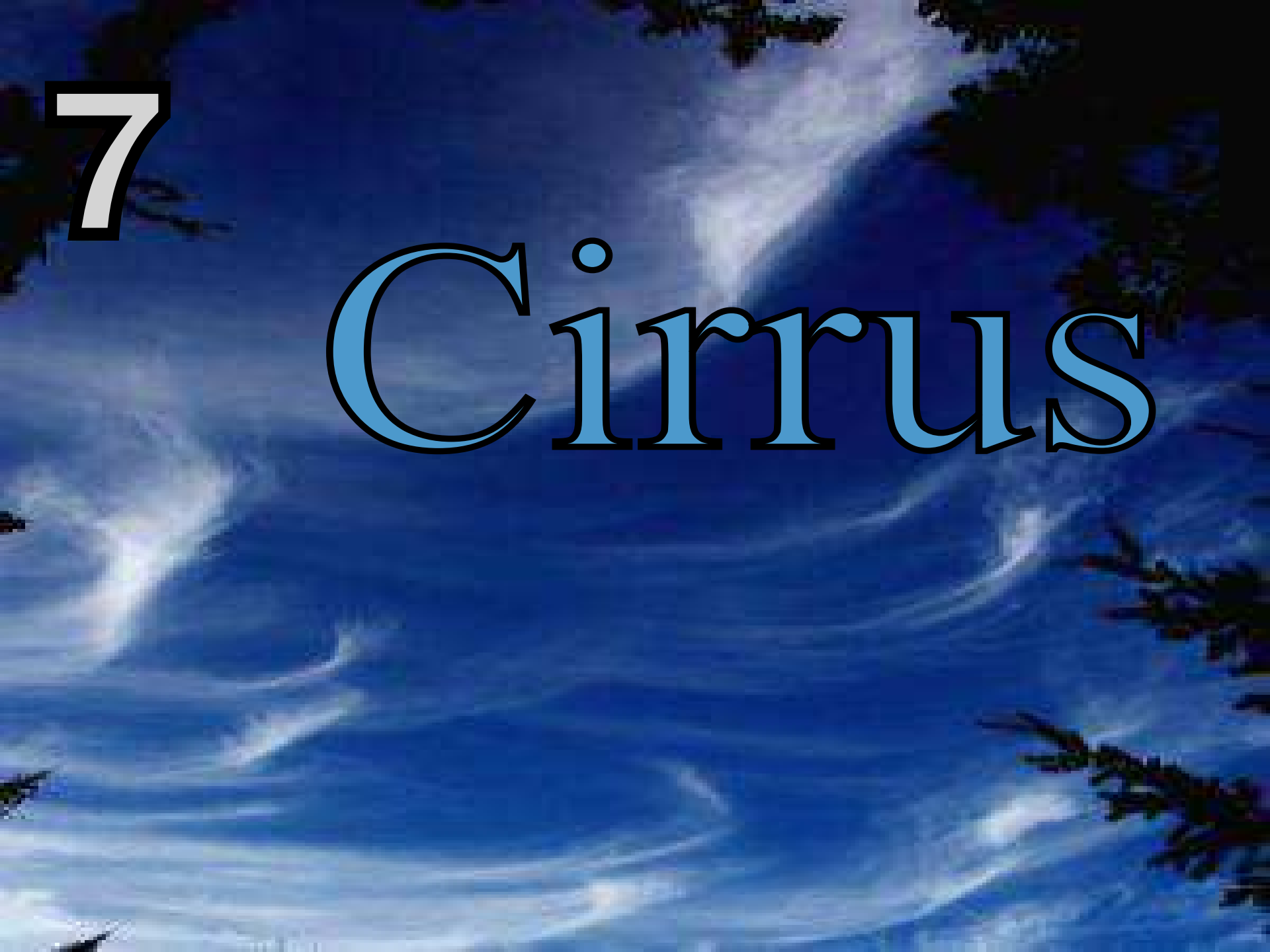

5


5
Cumulonimbus


6
stratus


6
Nimbo stratus


7


7
Cirrus


8
Nimbo


8
Nimbostratus


9
stratus

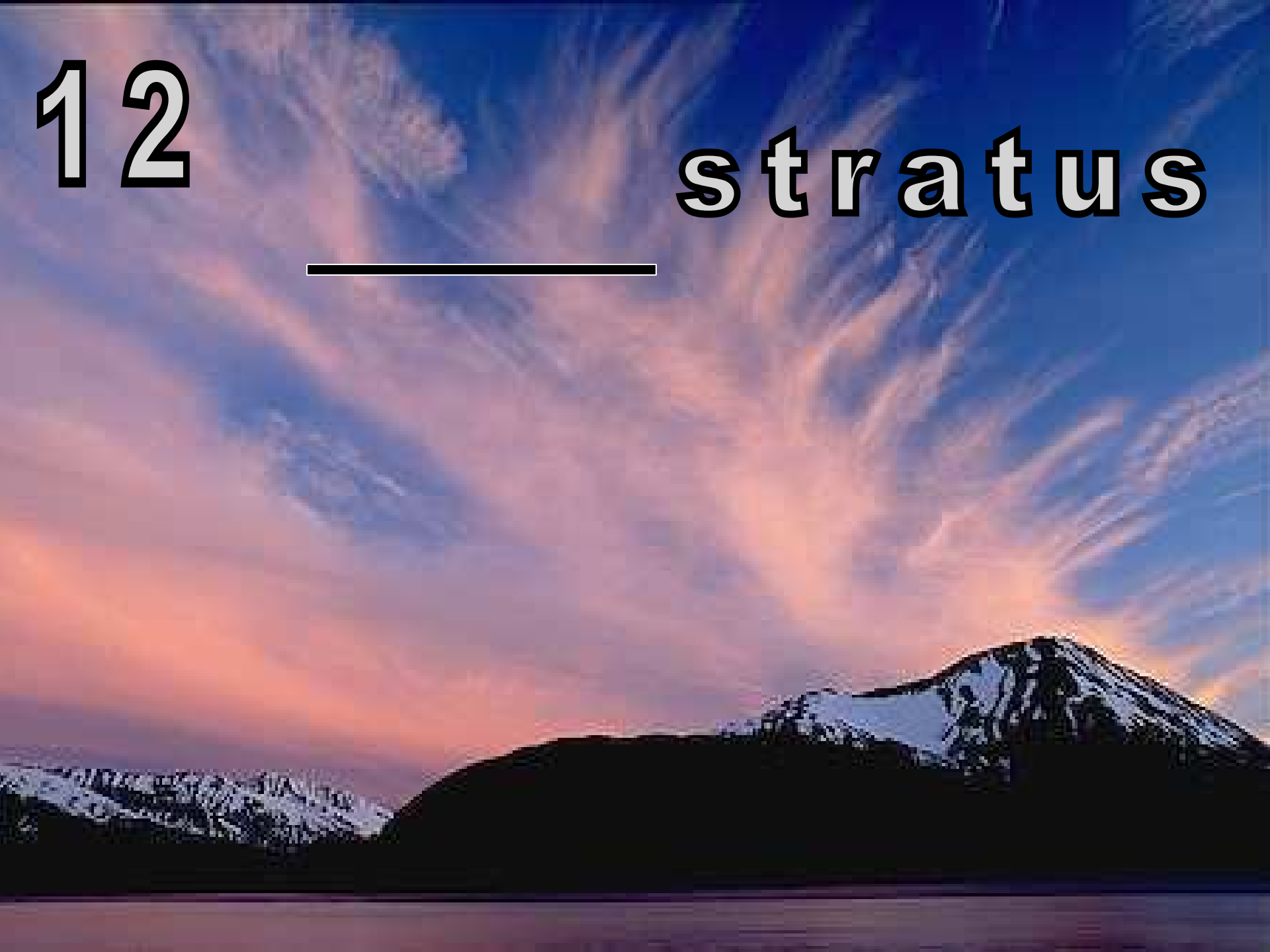

9 Cirro stratus


10
Alto


10
Alto stratus


11
Alto


11
Alto stratus


12
stratus

12

cirro stratus

13

cirro

13

cirro cumulus


14


14
Cumulus


15


15
Cumulus


16

16

Cirrus


17


17
Cumulonimbus


18
stratus


18
nimbo stratus


19

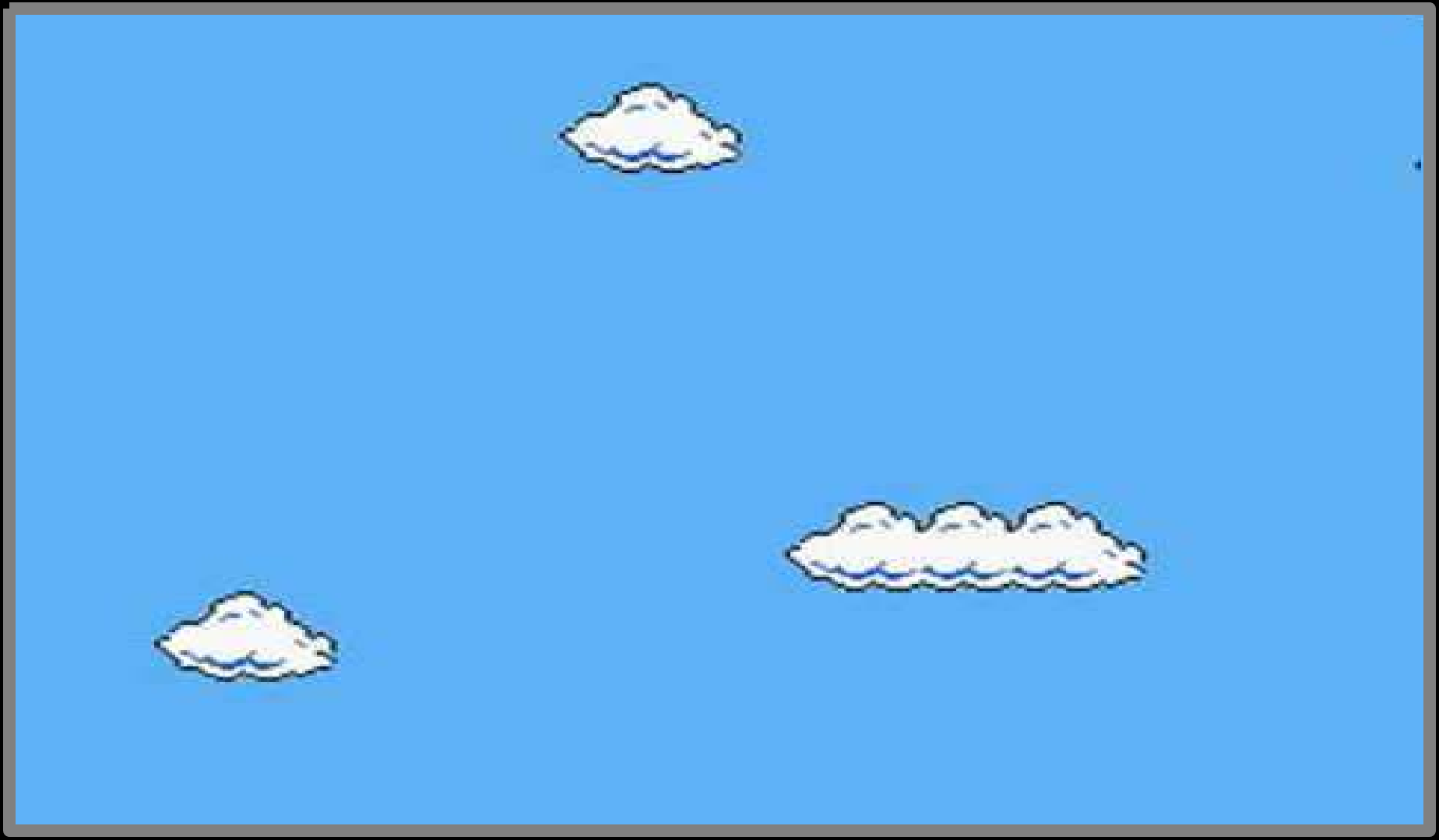
19

Lenticular


20

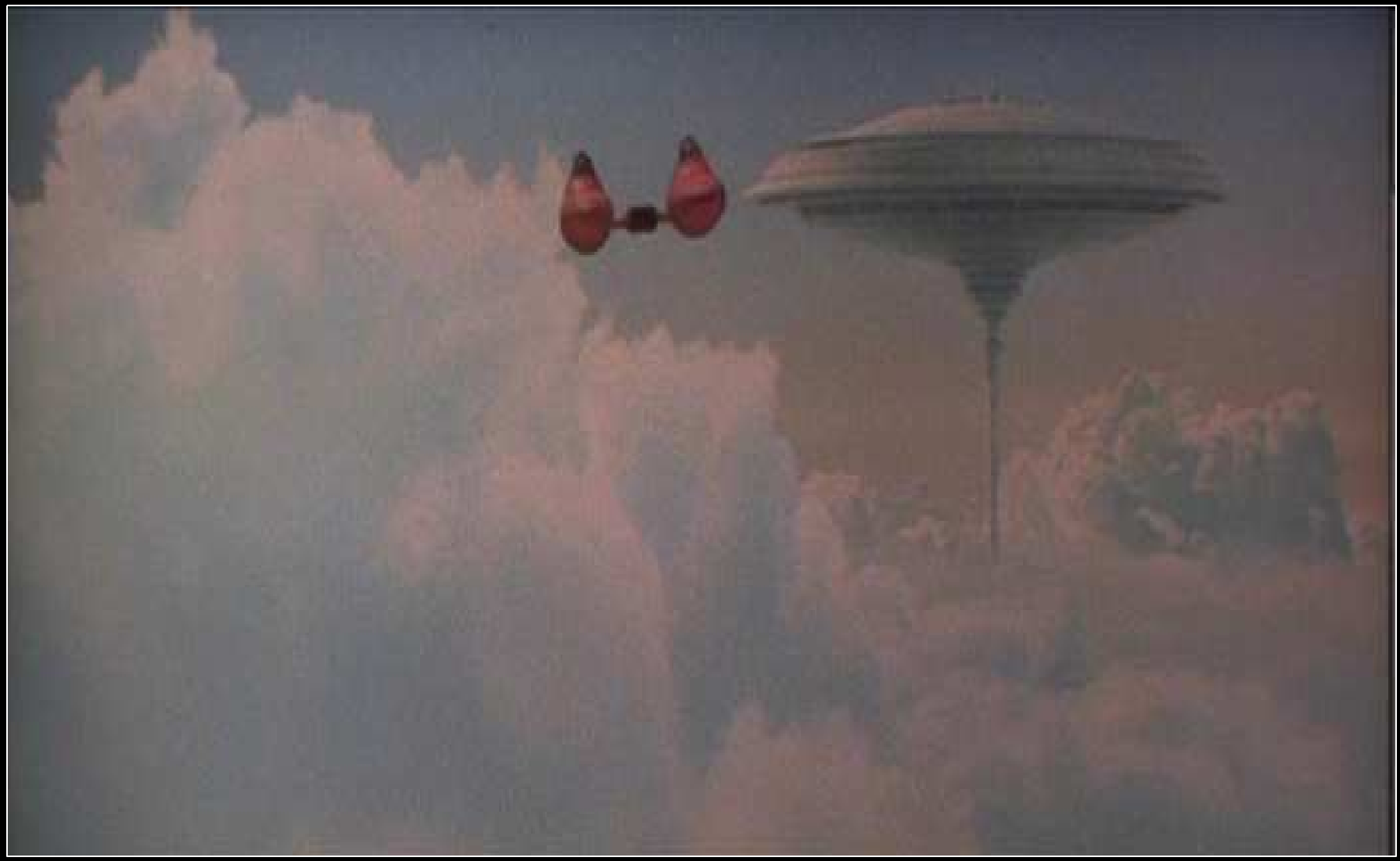

20
Cumulonimbus

- *21 (Bonus) In what game will you find these cumulus clouds?

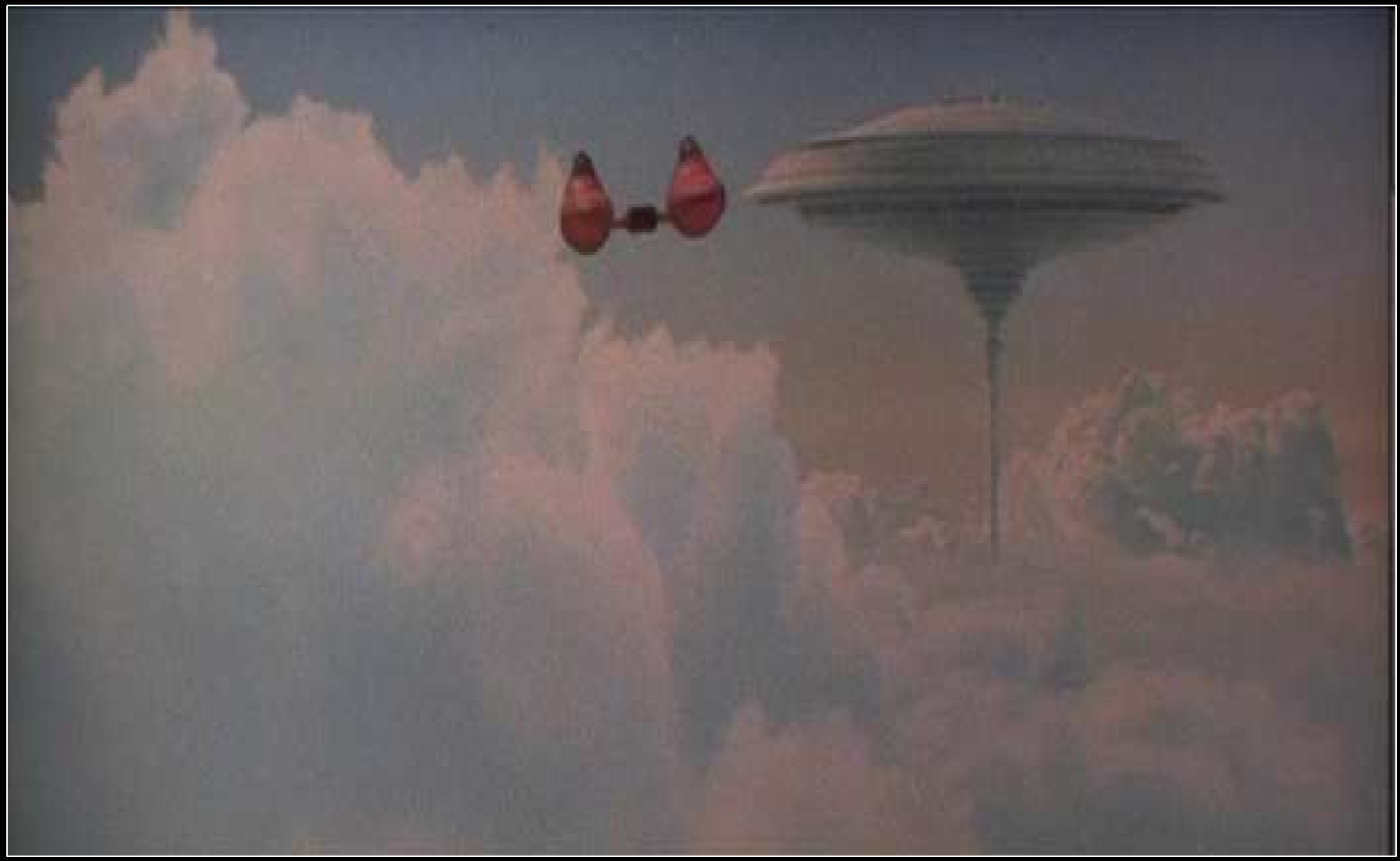


- Super Mario Bros.

- Bonus #2. What do you know about this picture?

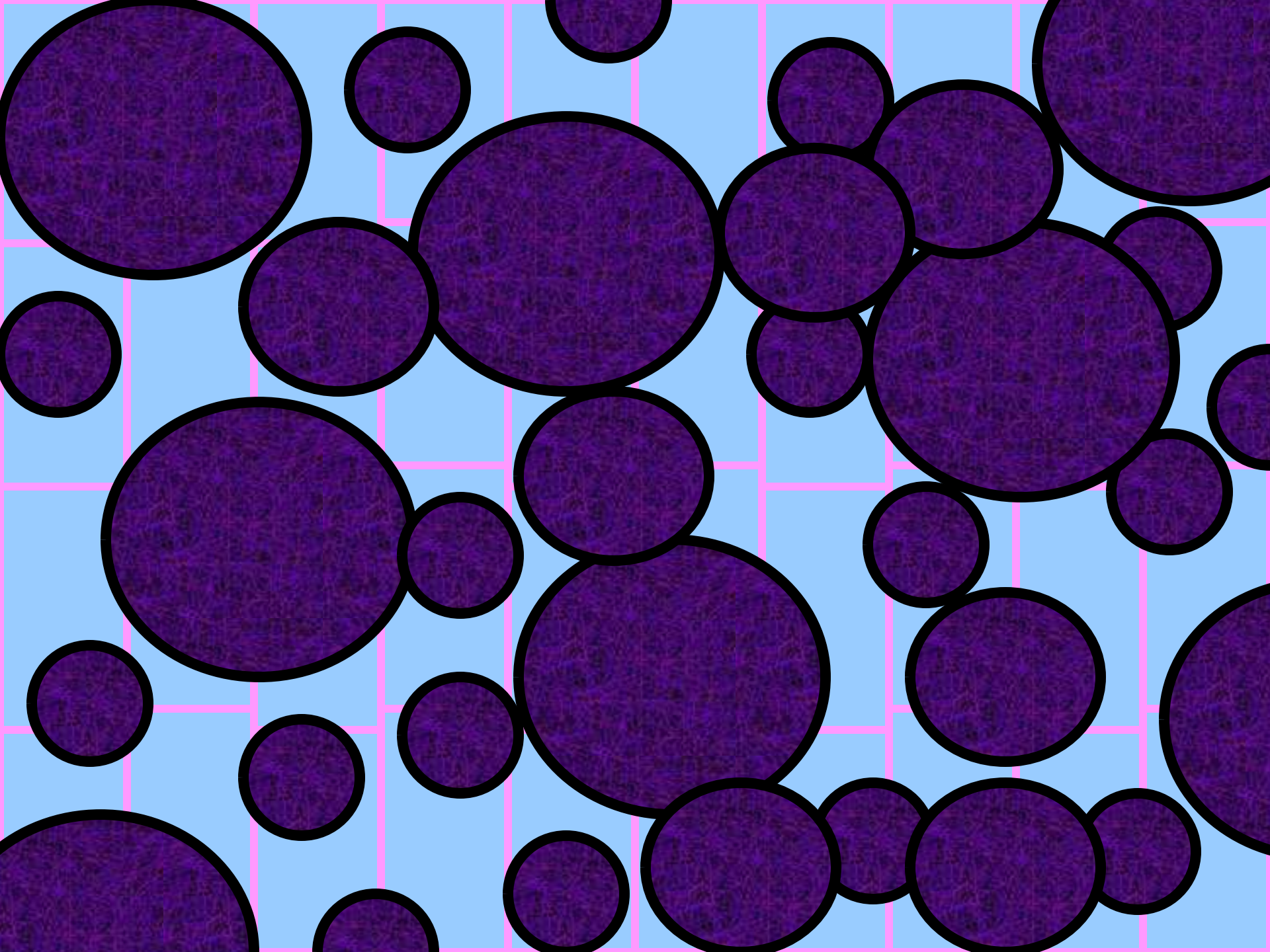


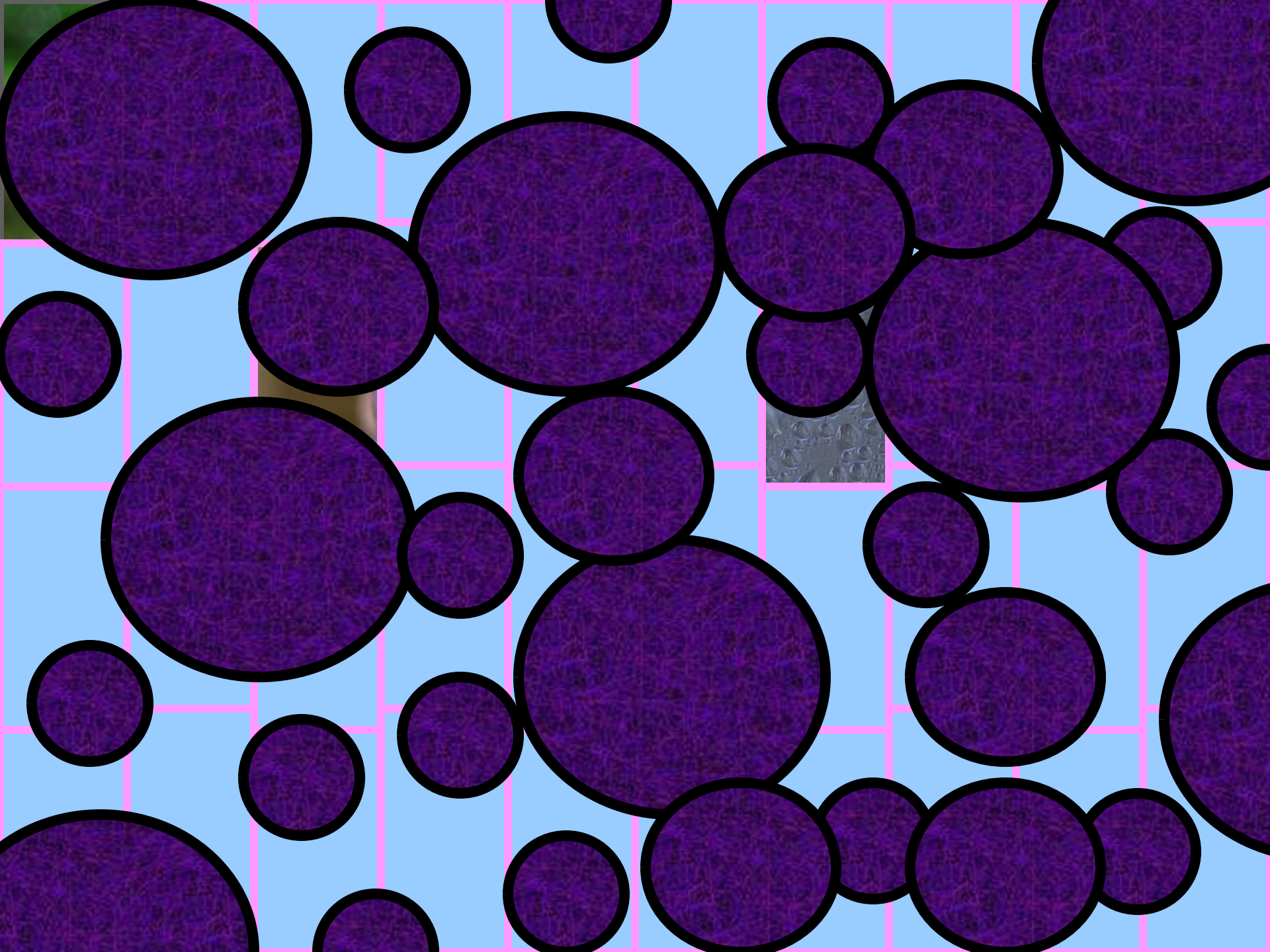
- Bonus #2. Cloud City from Star Wars Episode IV The Empire Strikes Back.

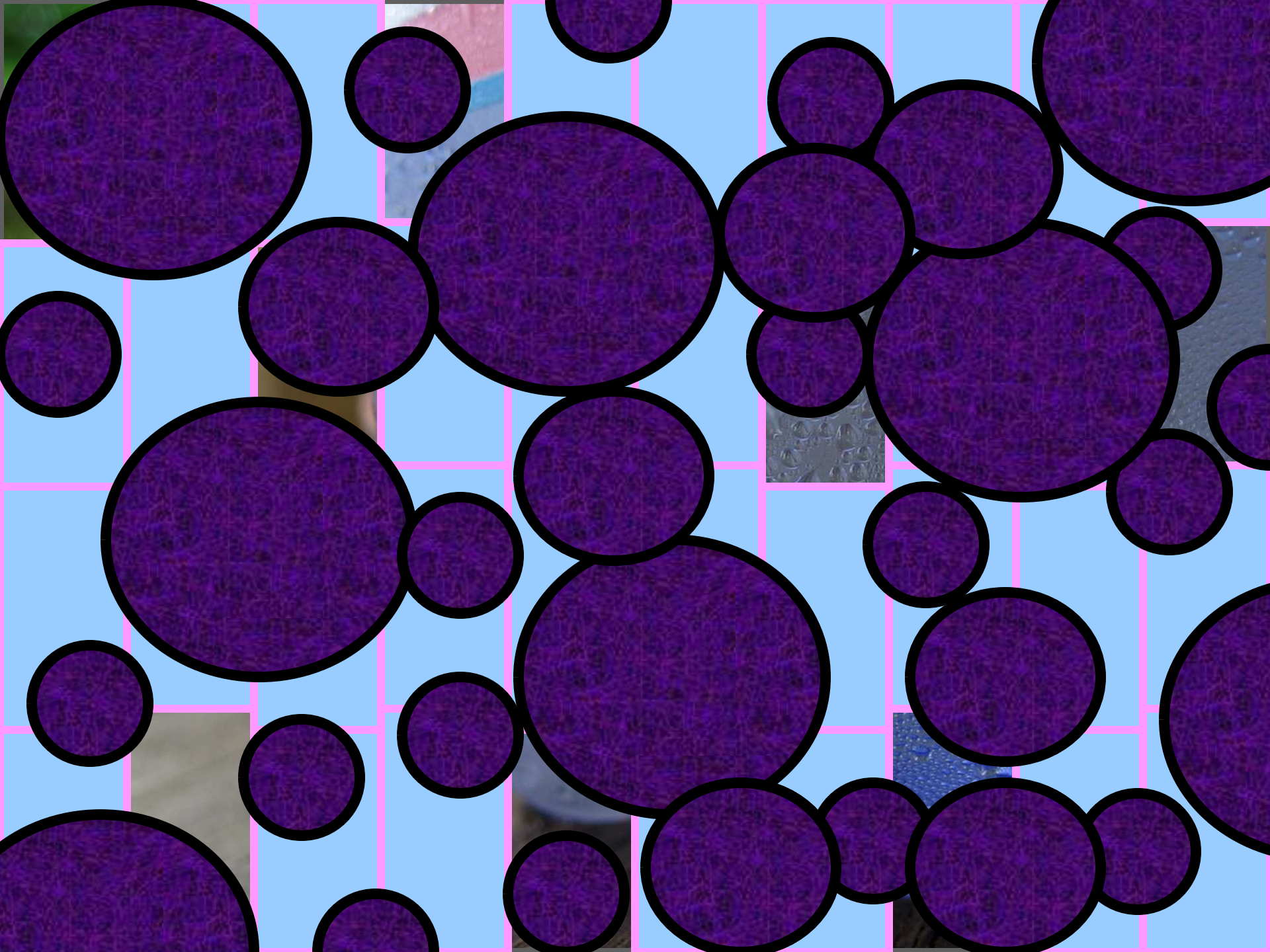


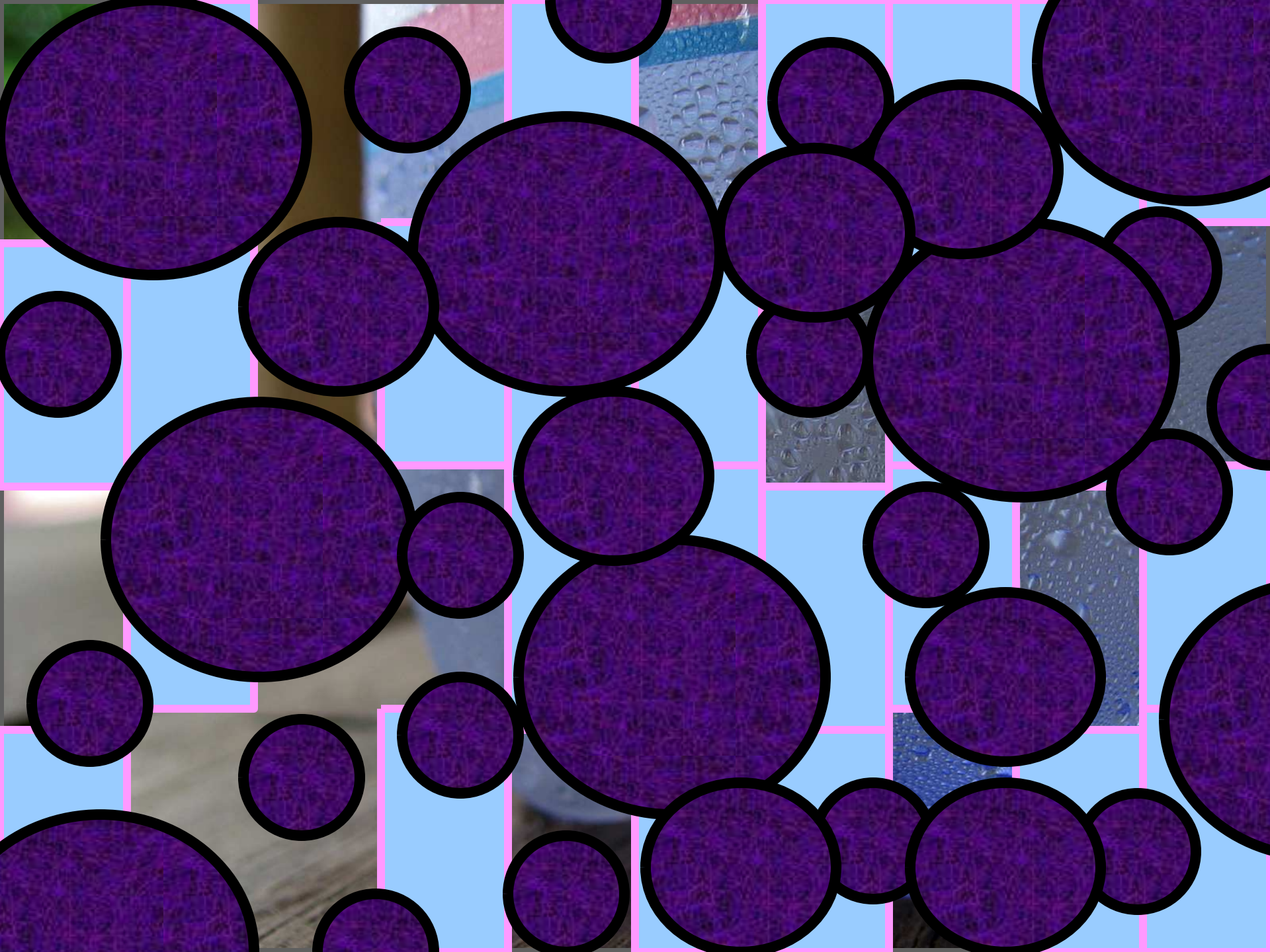
- Video Song! (Optional) The Water Cycle.
  - Very strange but extremely catchy.
  - Teacher should preview prior as it contains some strange parts.
  - http://www.youtube.com/watch?v=Zejk_iNFfPA

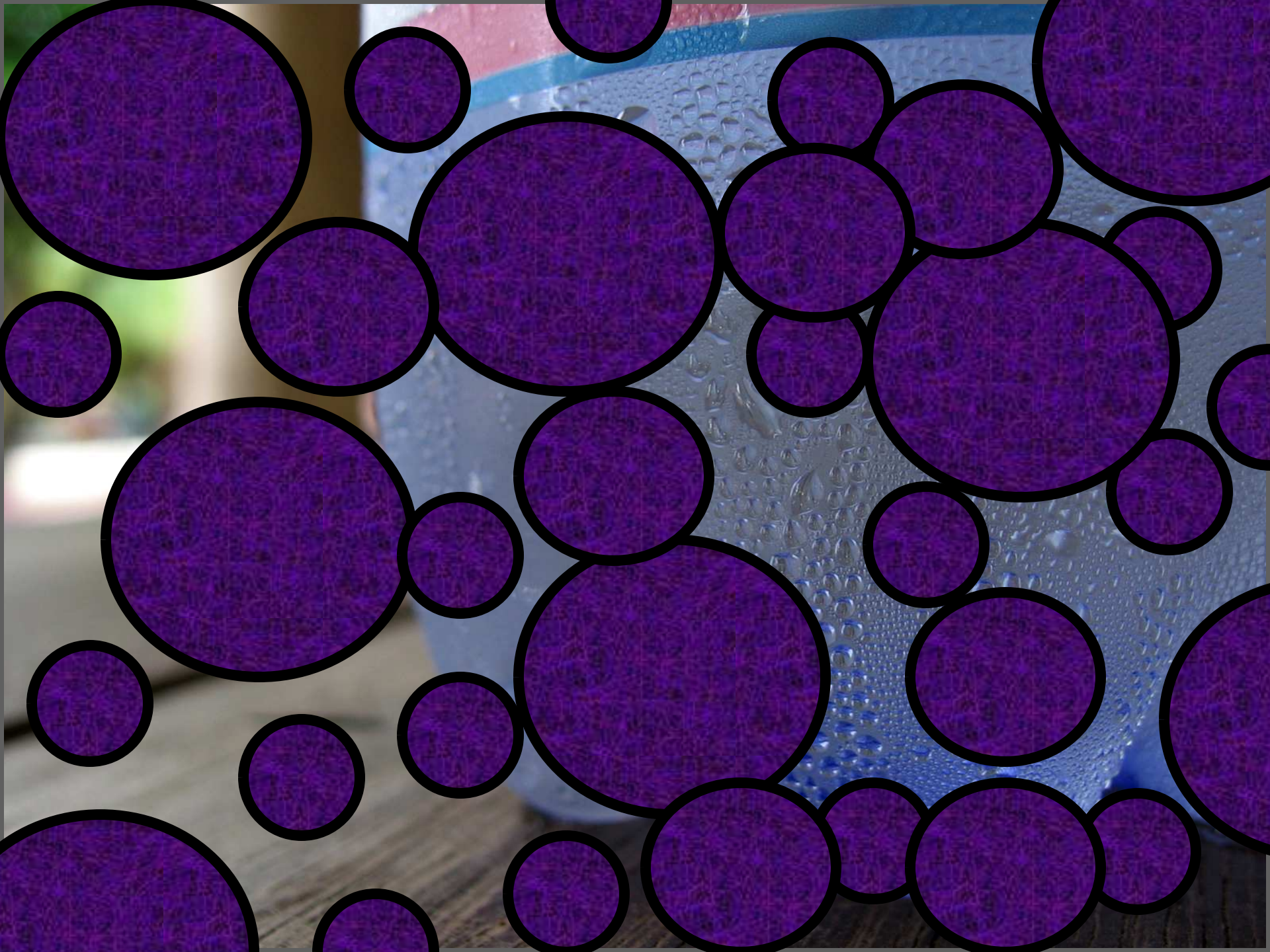
- Try and identify the picture beneath the squares.
  - Raise your hand when you think you know. You only get one guess.

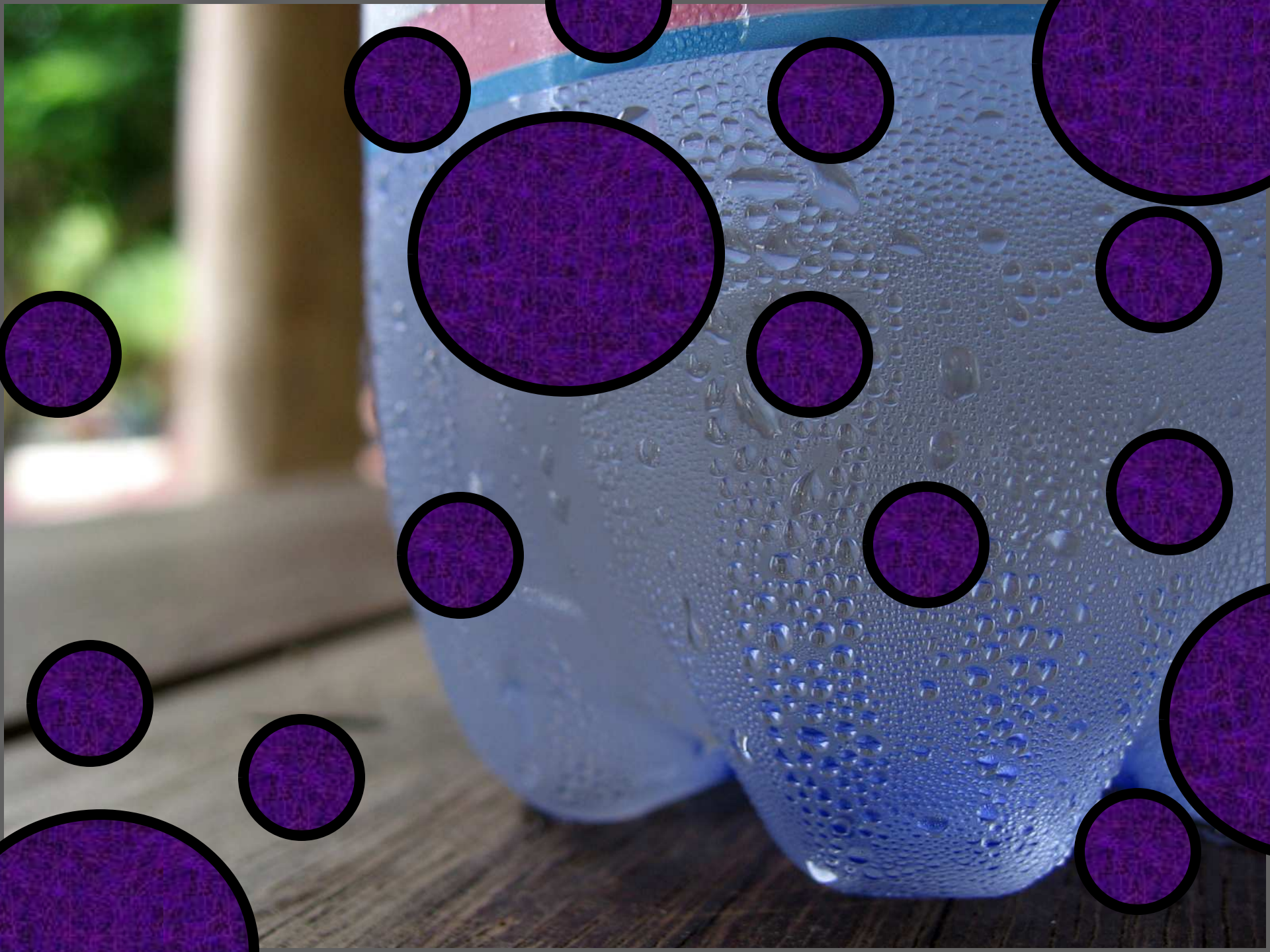




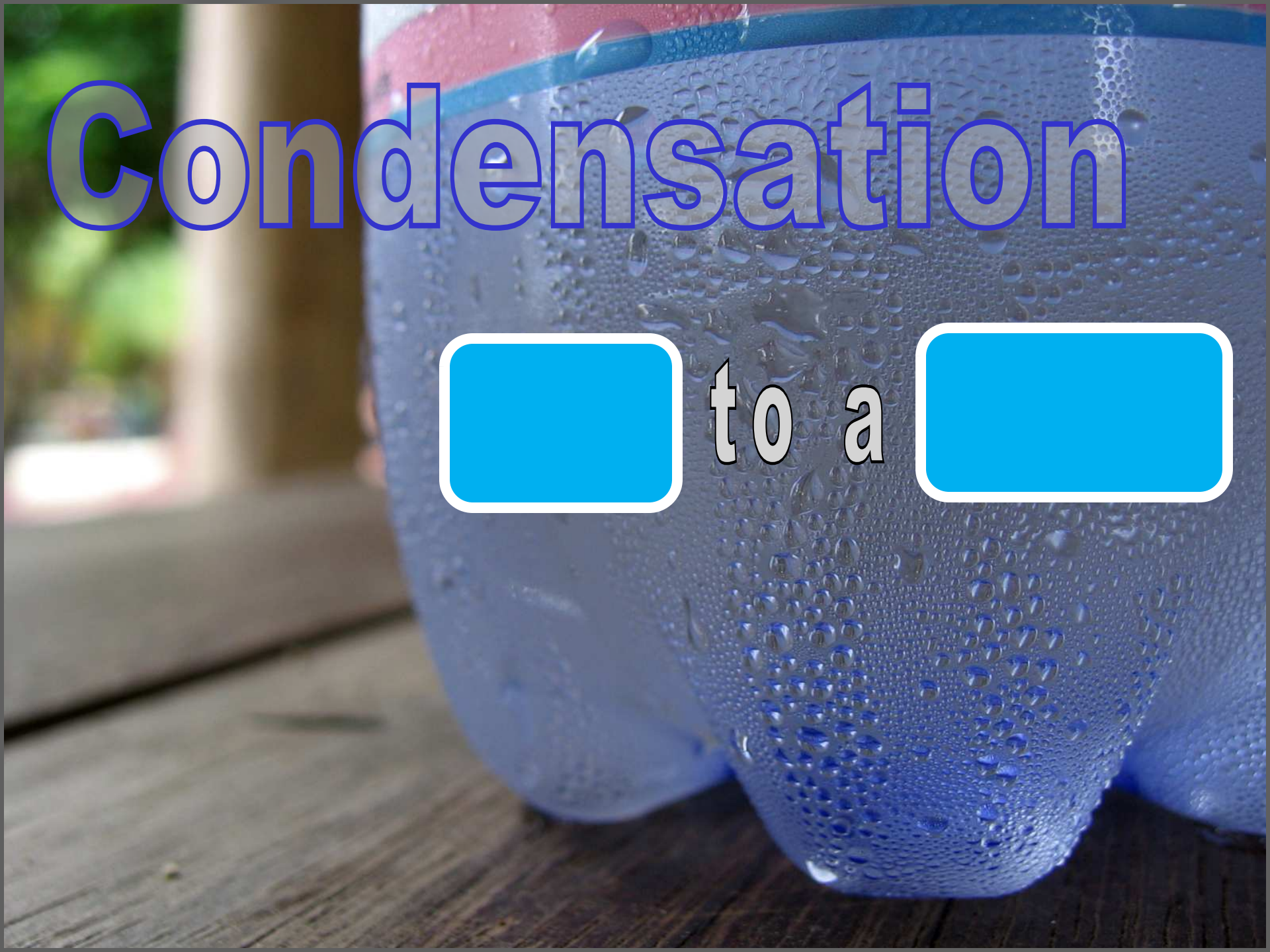


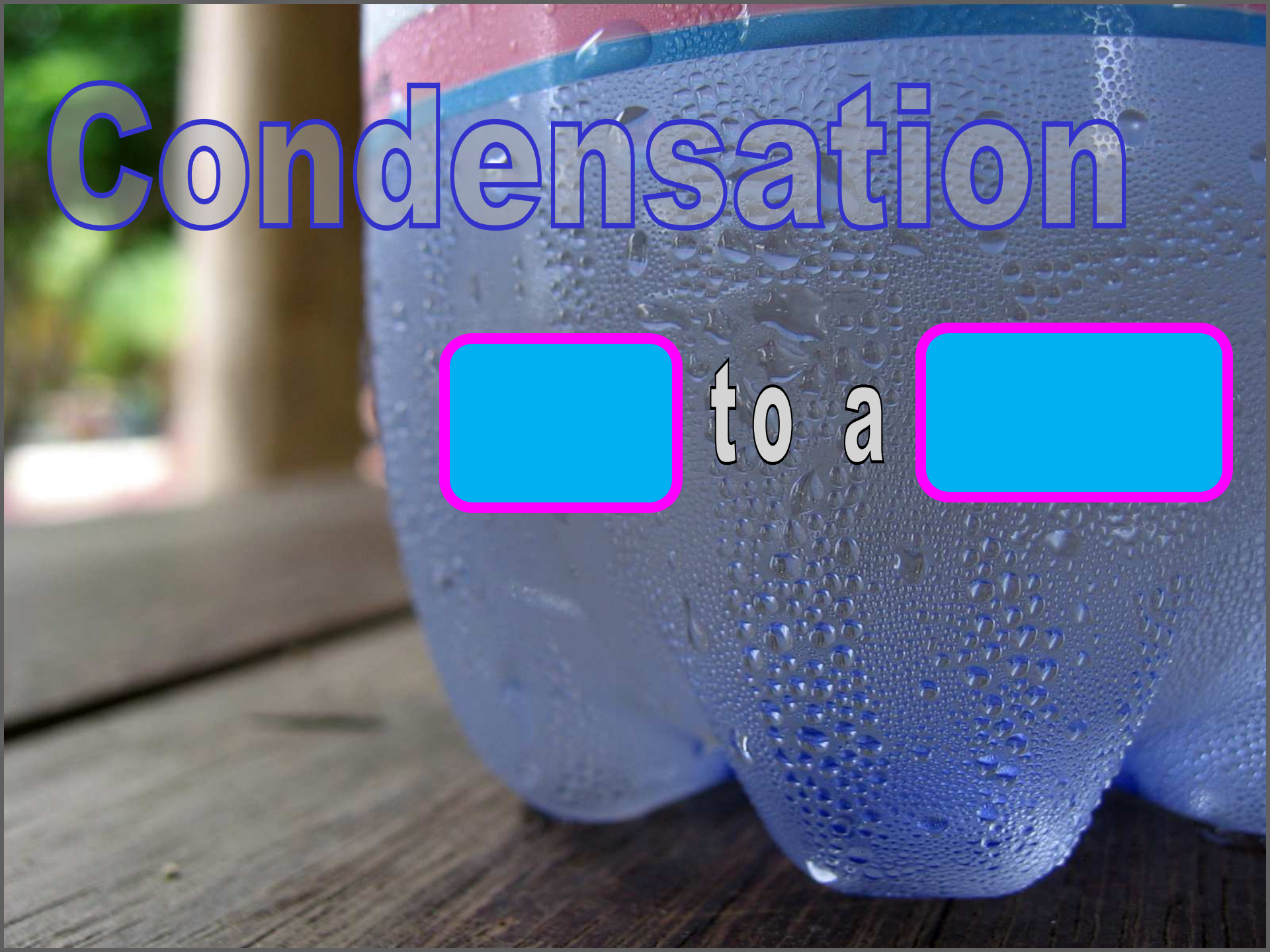






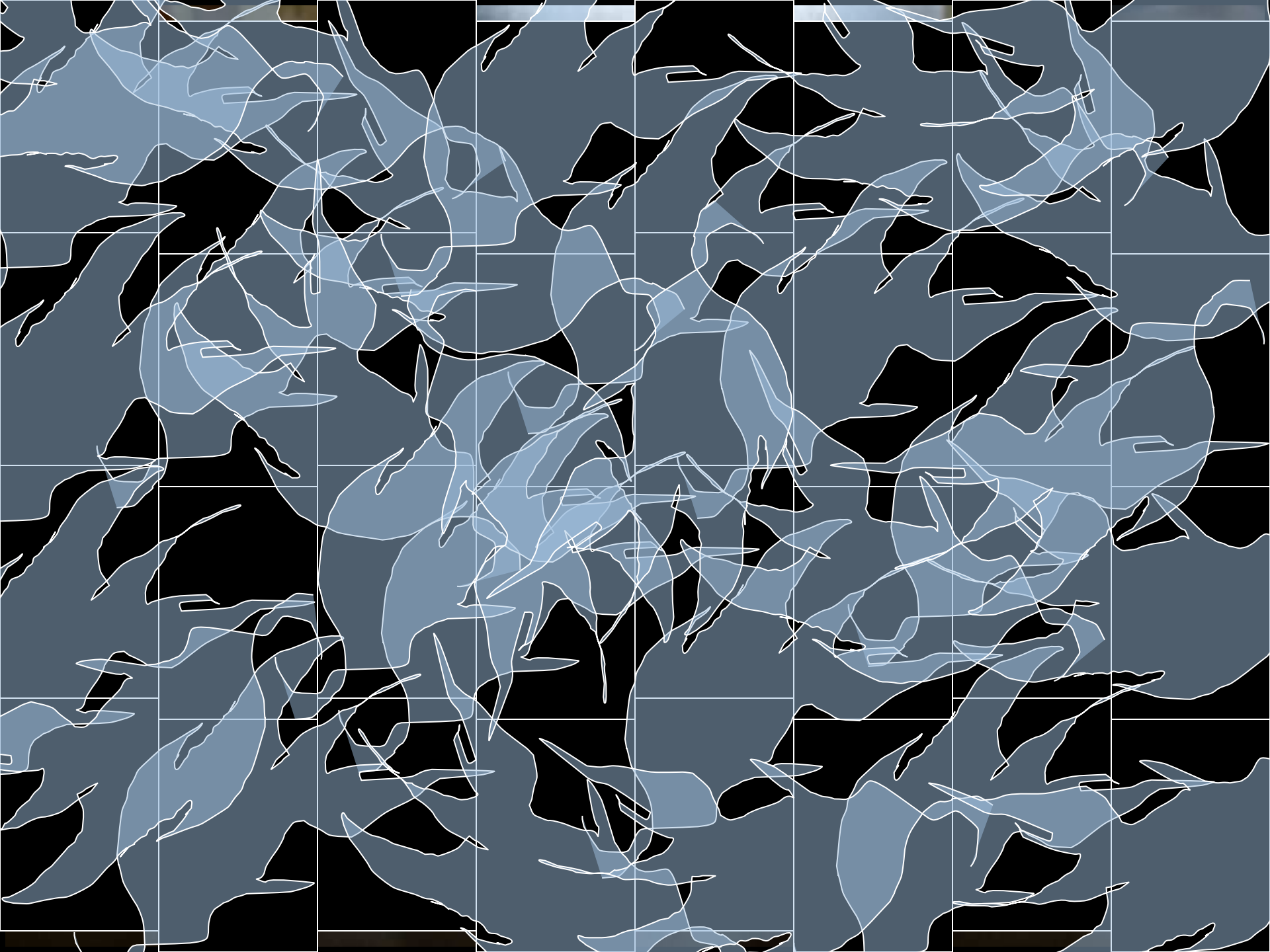

Condensation

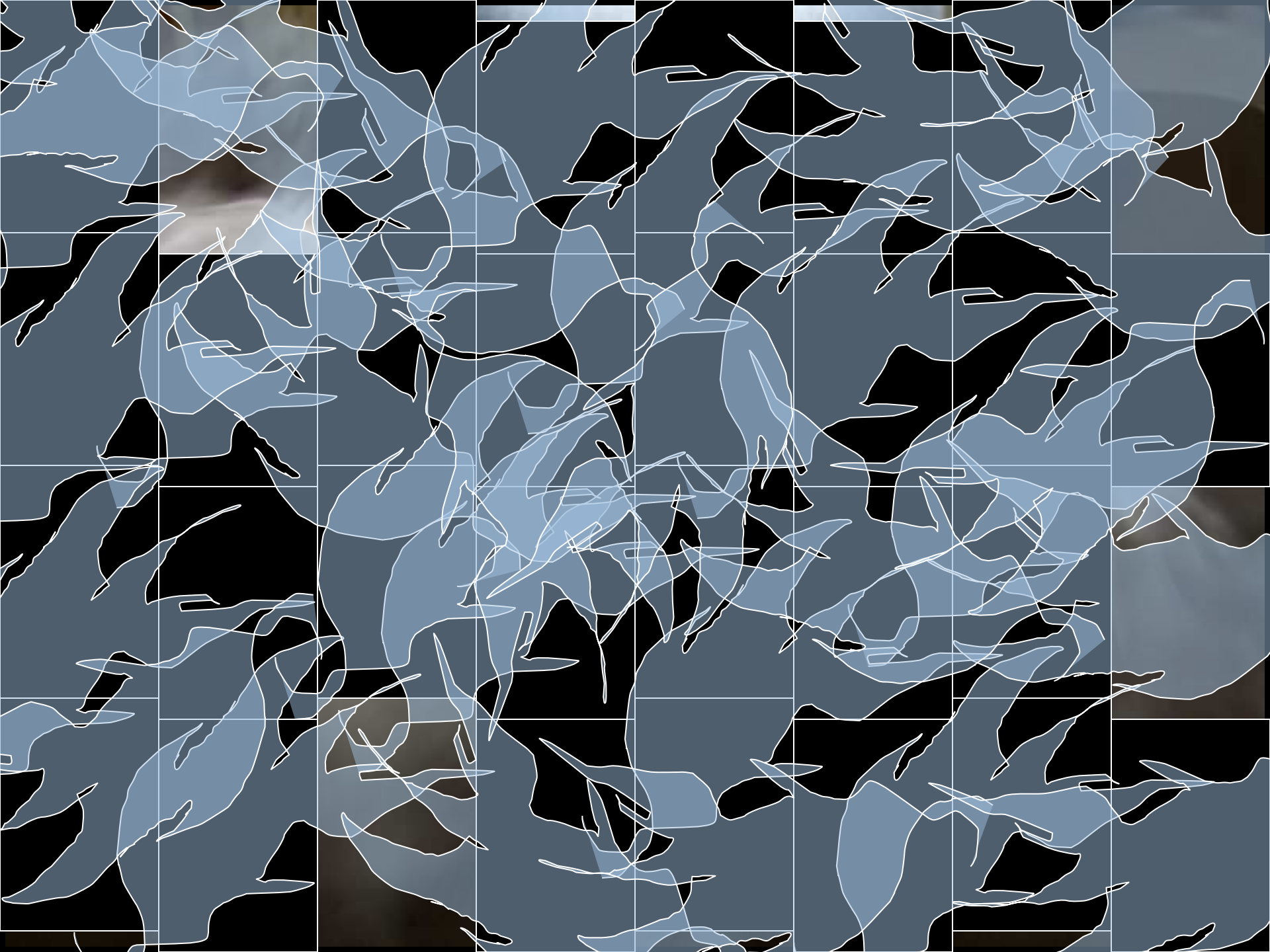

Condensation
to a

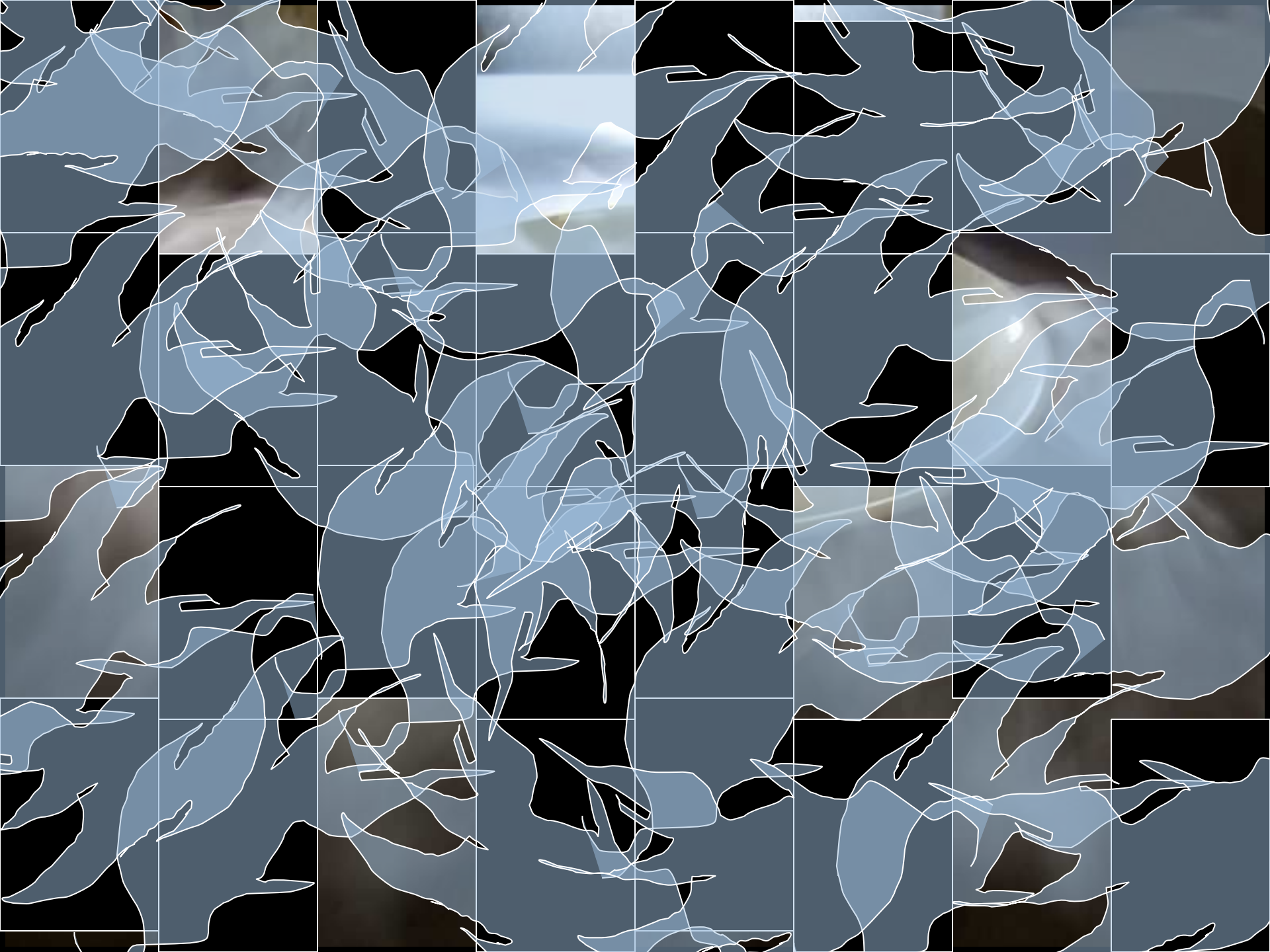

Condensation
to a

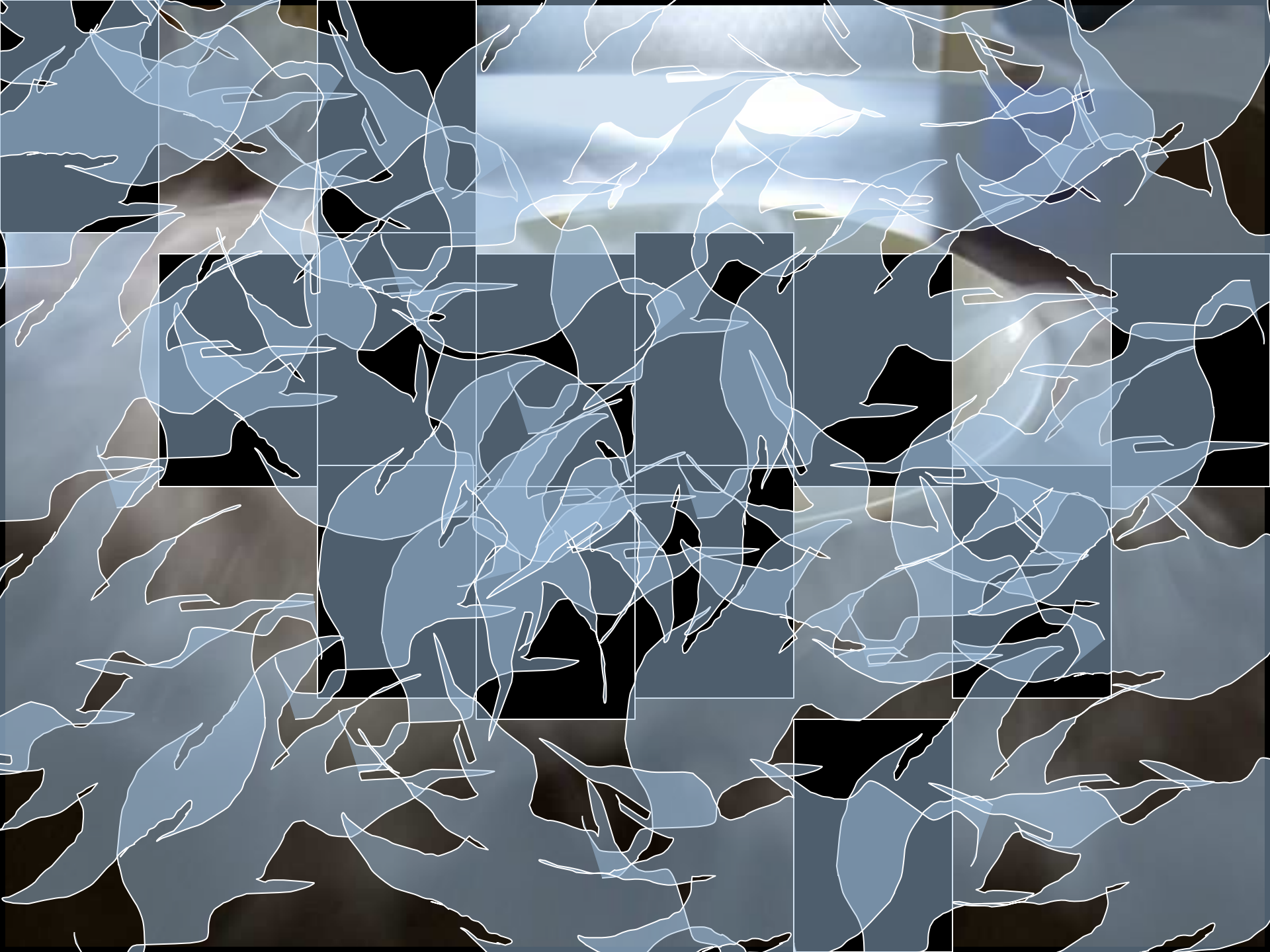

Condensation
gas to a liquid

- Try and identify the picture beneath the squares.
  - Raise your hand when you think you know. You only get one guess.







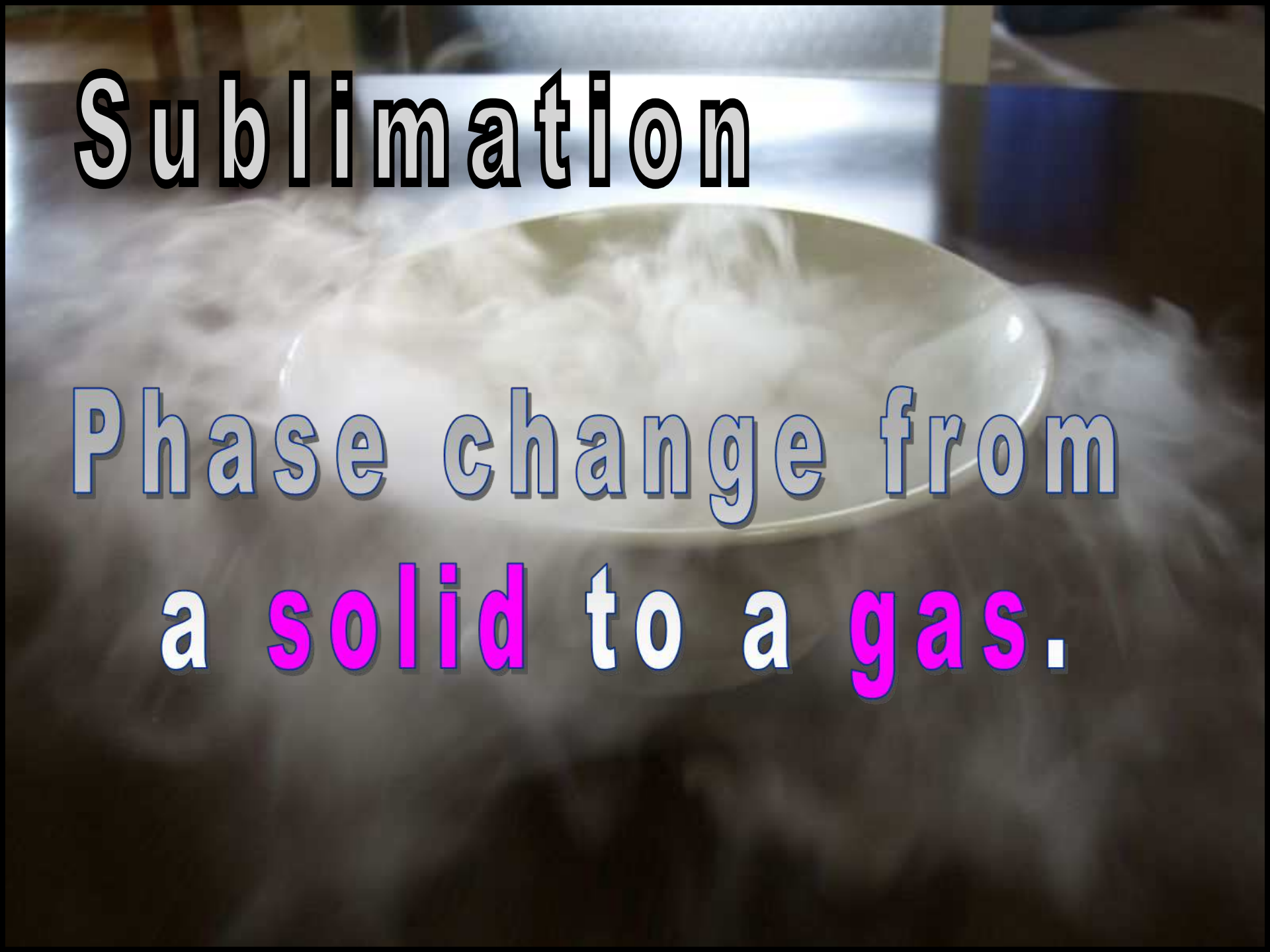



Dry Ice

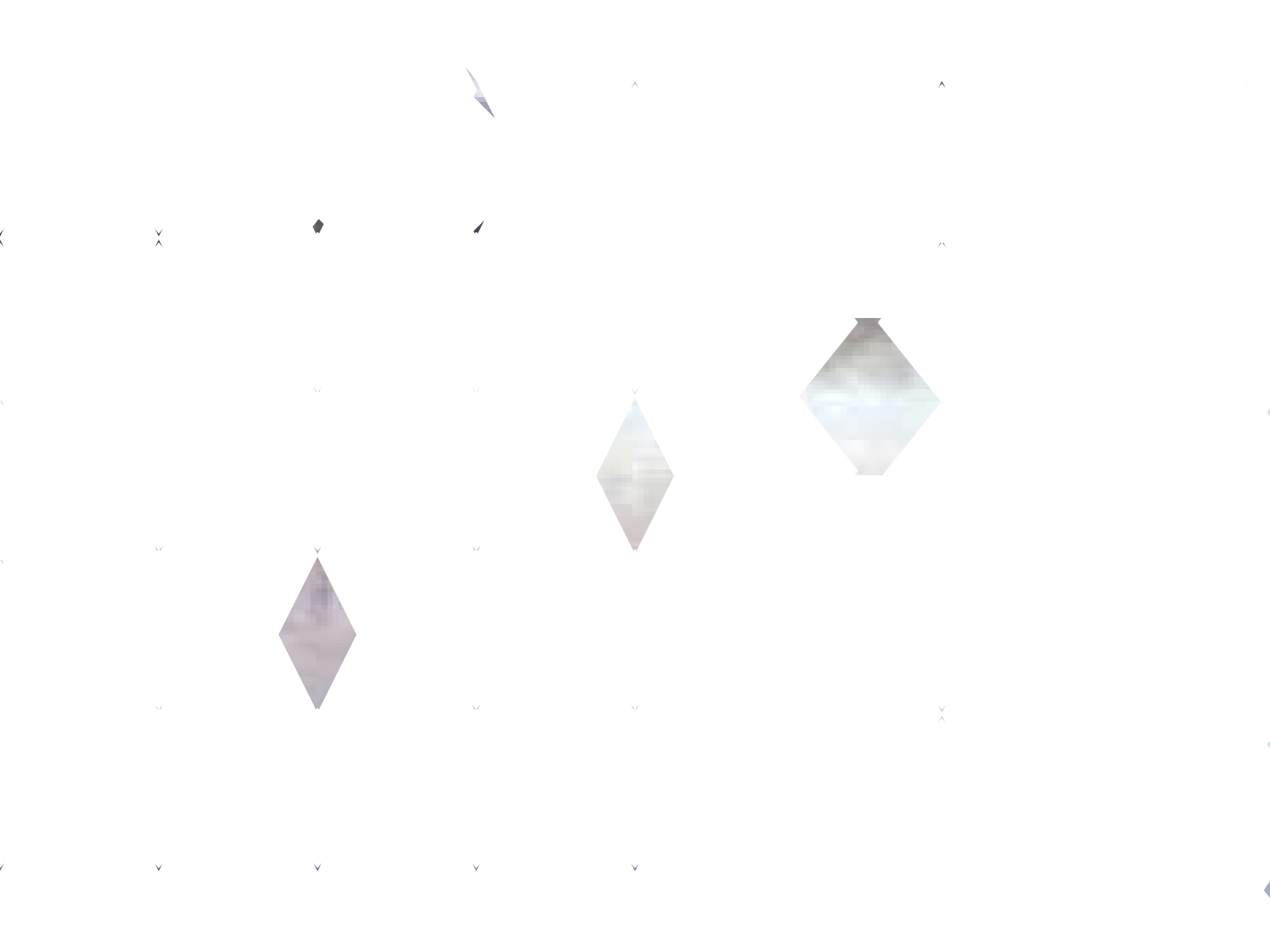
Sublimation

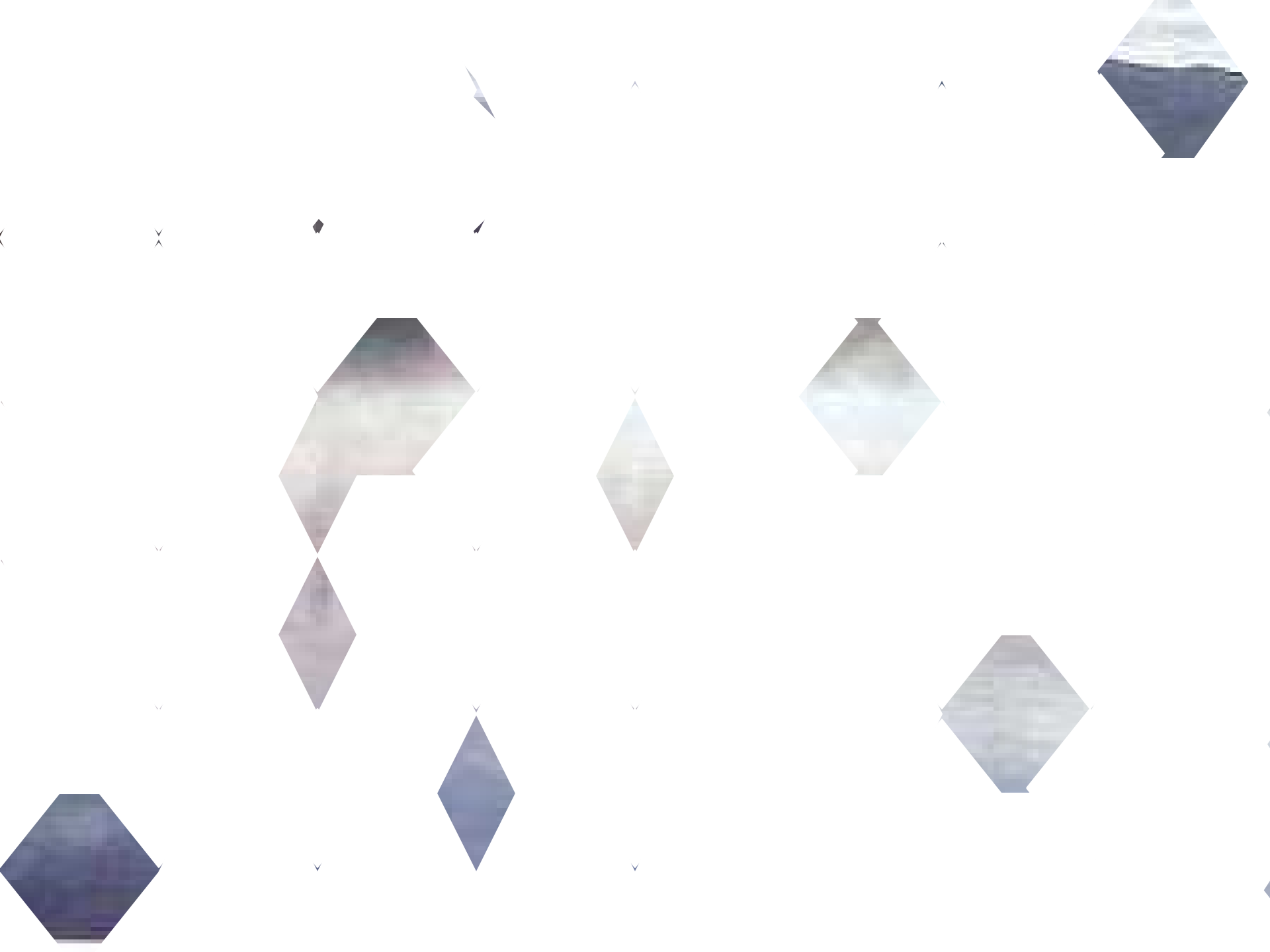
Sublimation

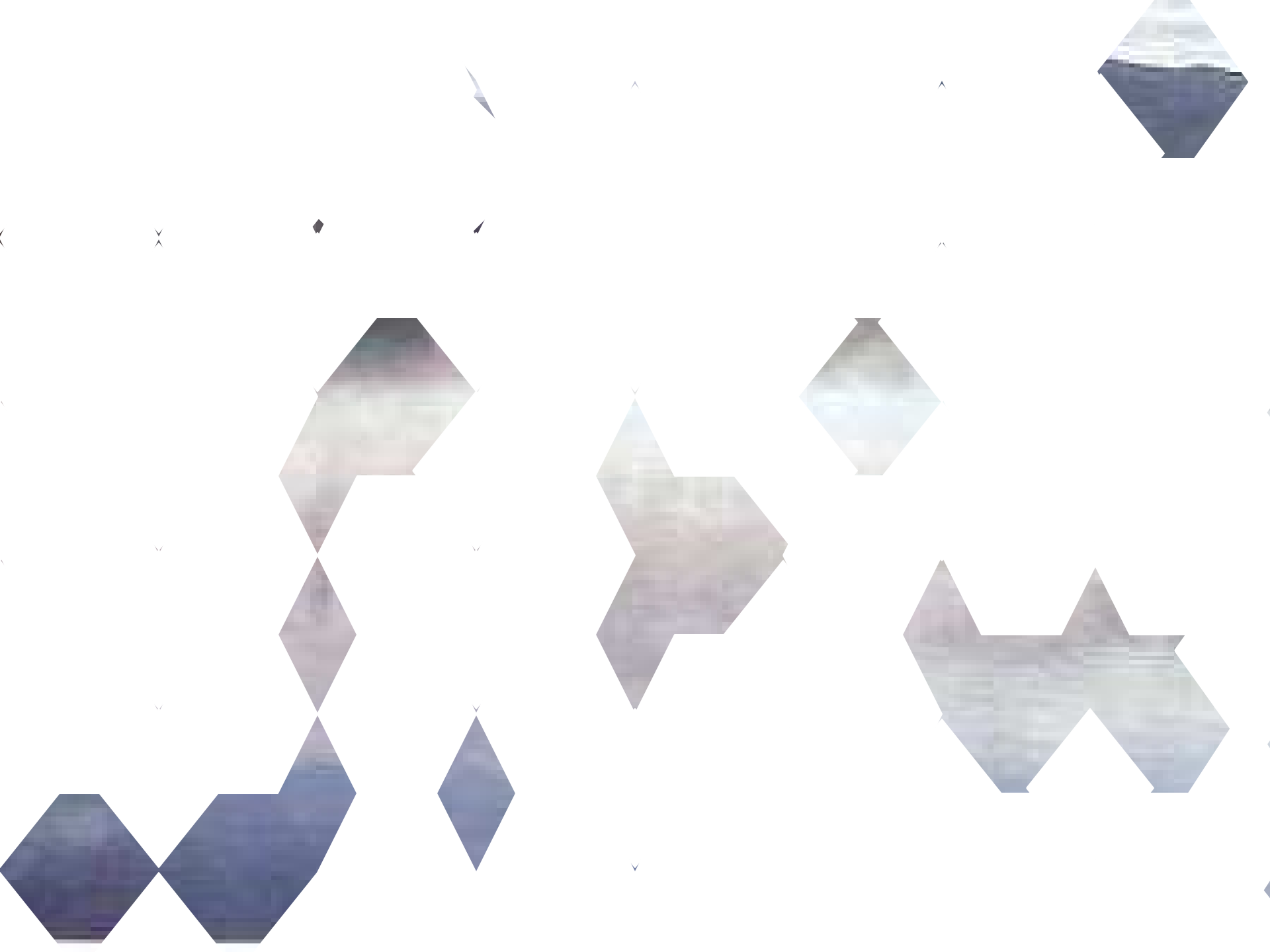
Phase change from a [ ] to a [ ]

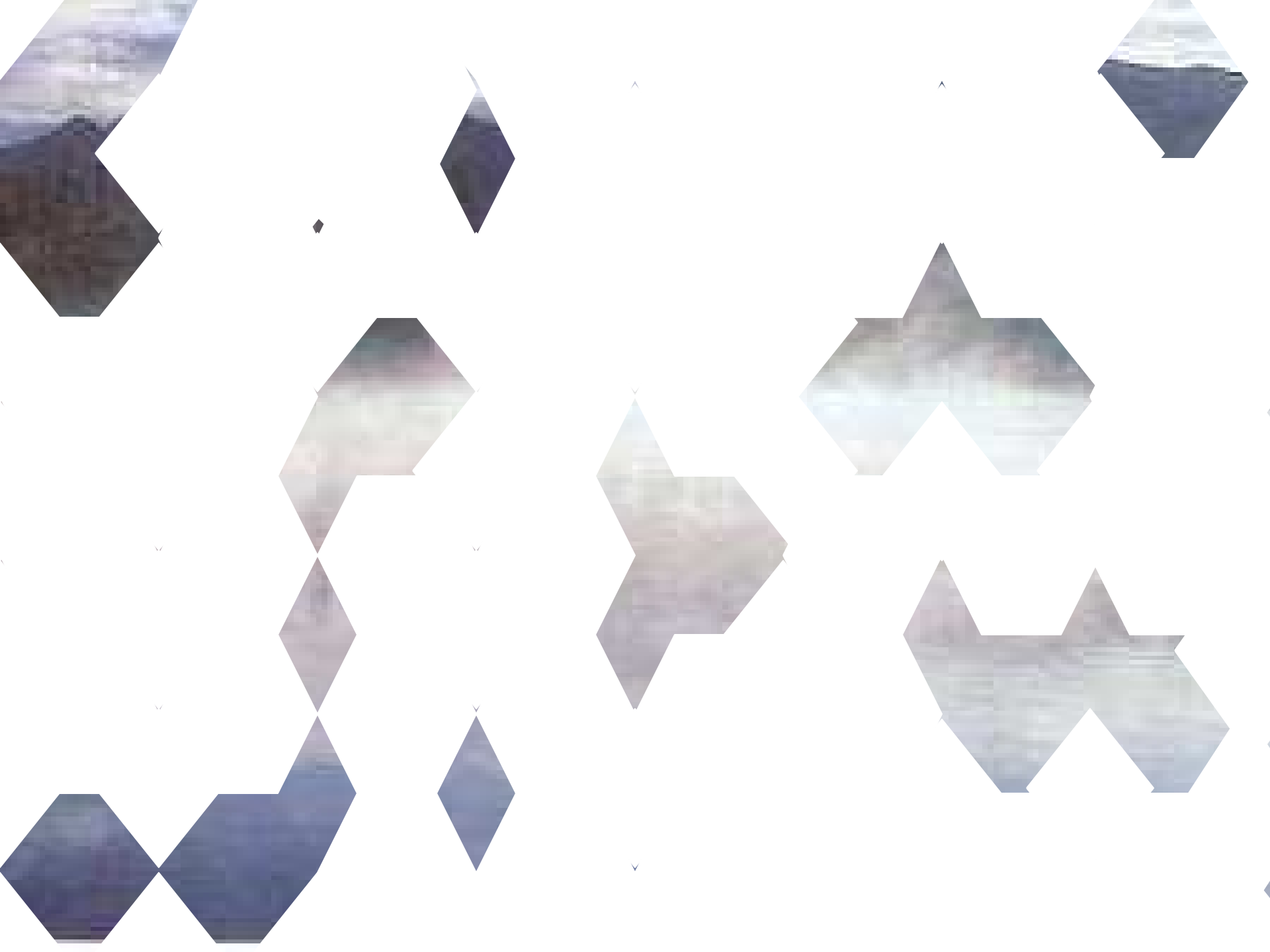

Sublimation
Phase change from
a solid to a gas.

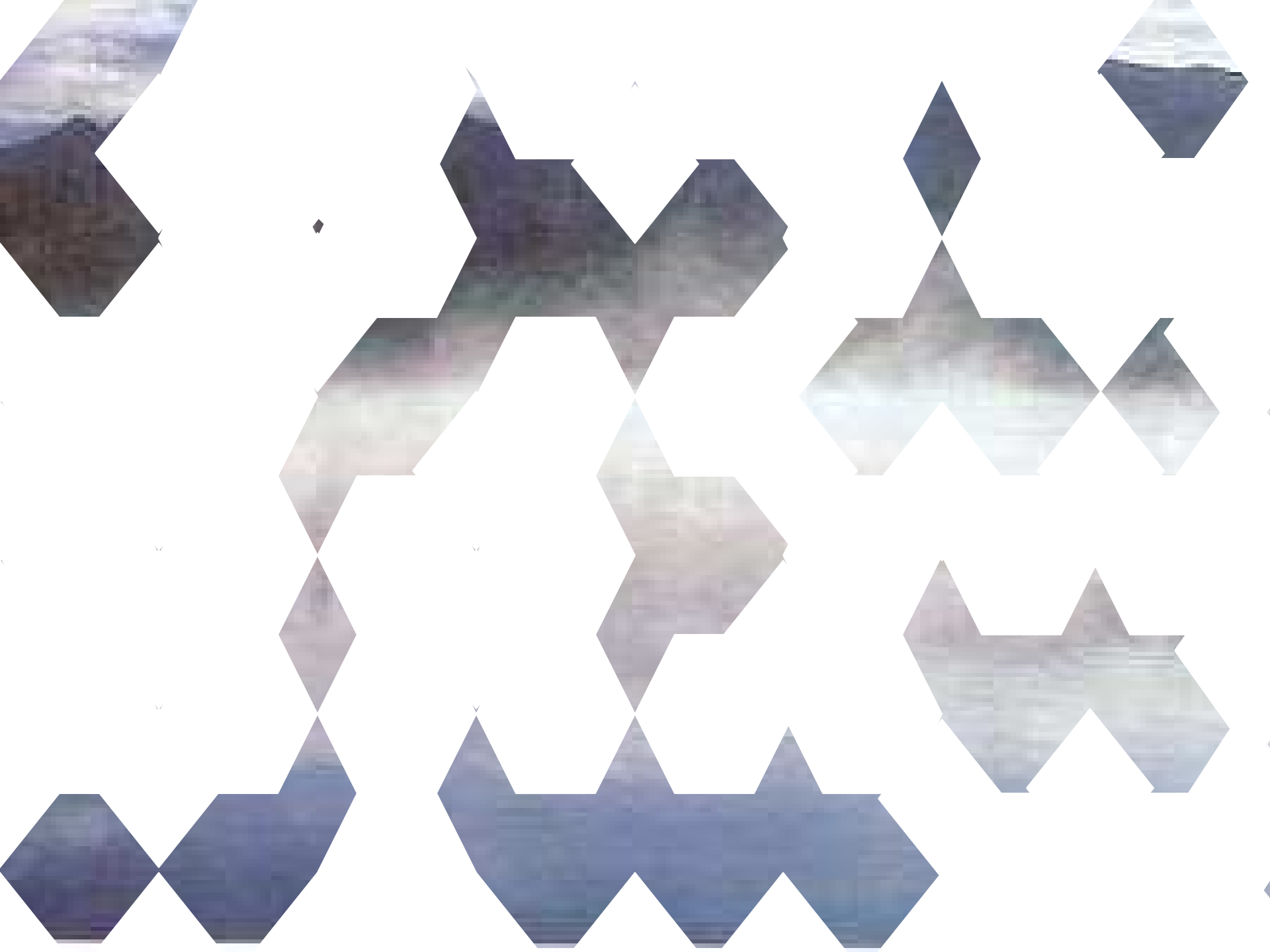
- Try Again! Try and identify the picture beneath the squares.
  - Raise your hand when you think you know. You only get one guess.

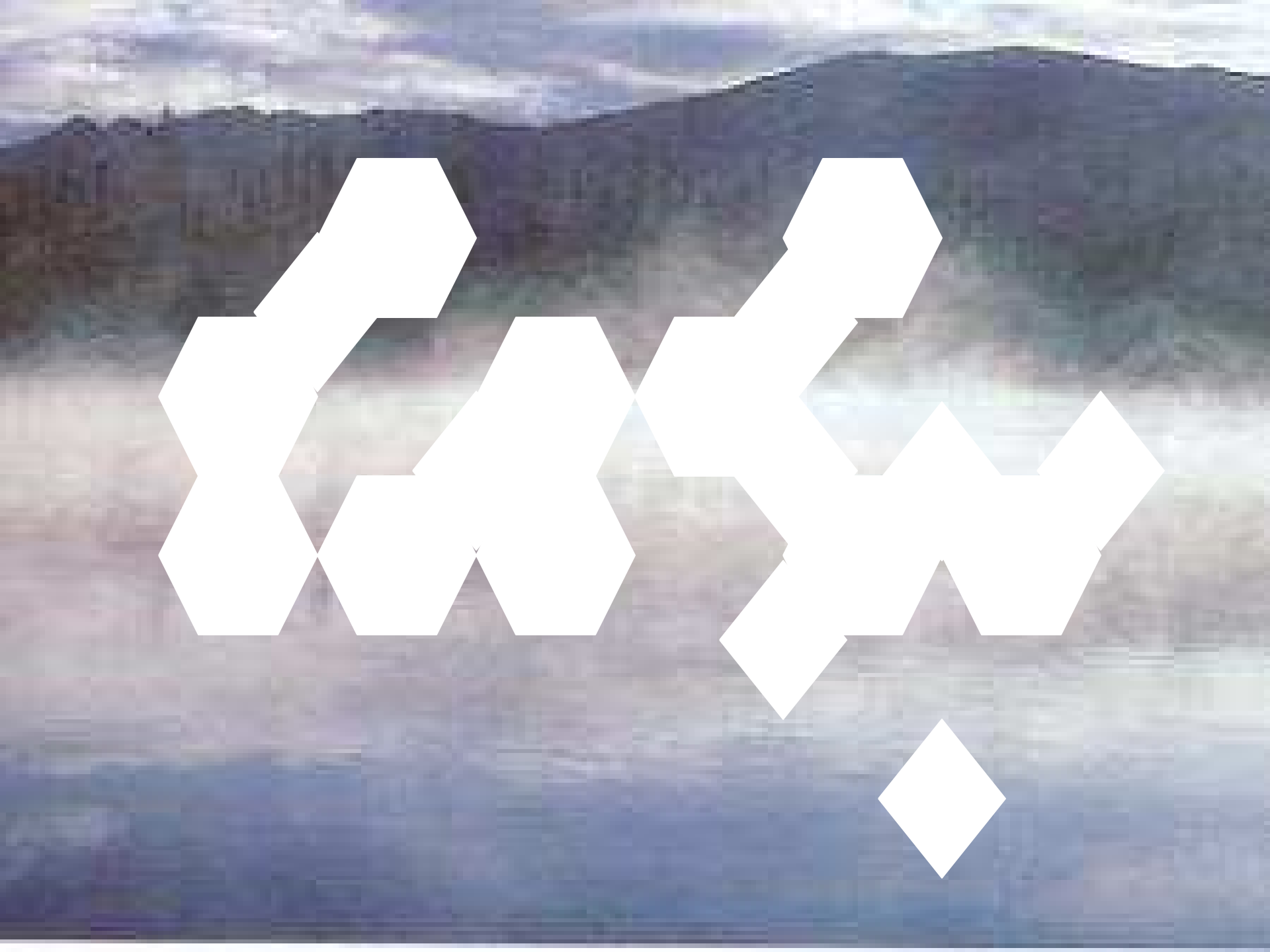












Evaporation

Evaporation

From [ ] to a [ ]

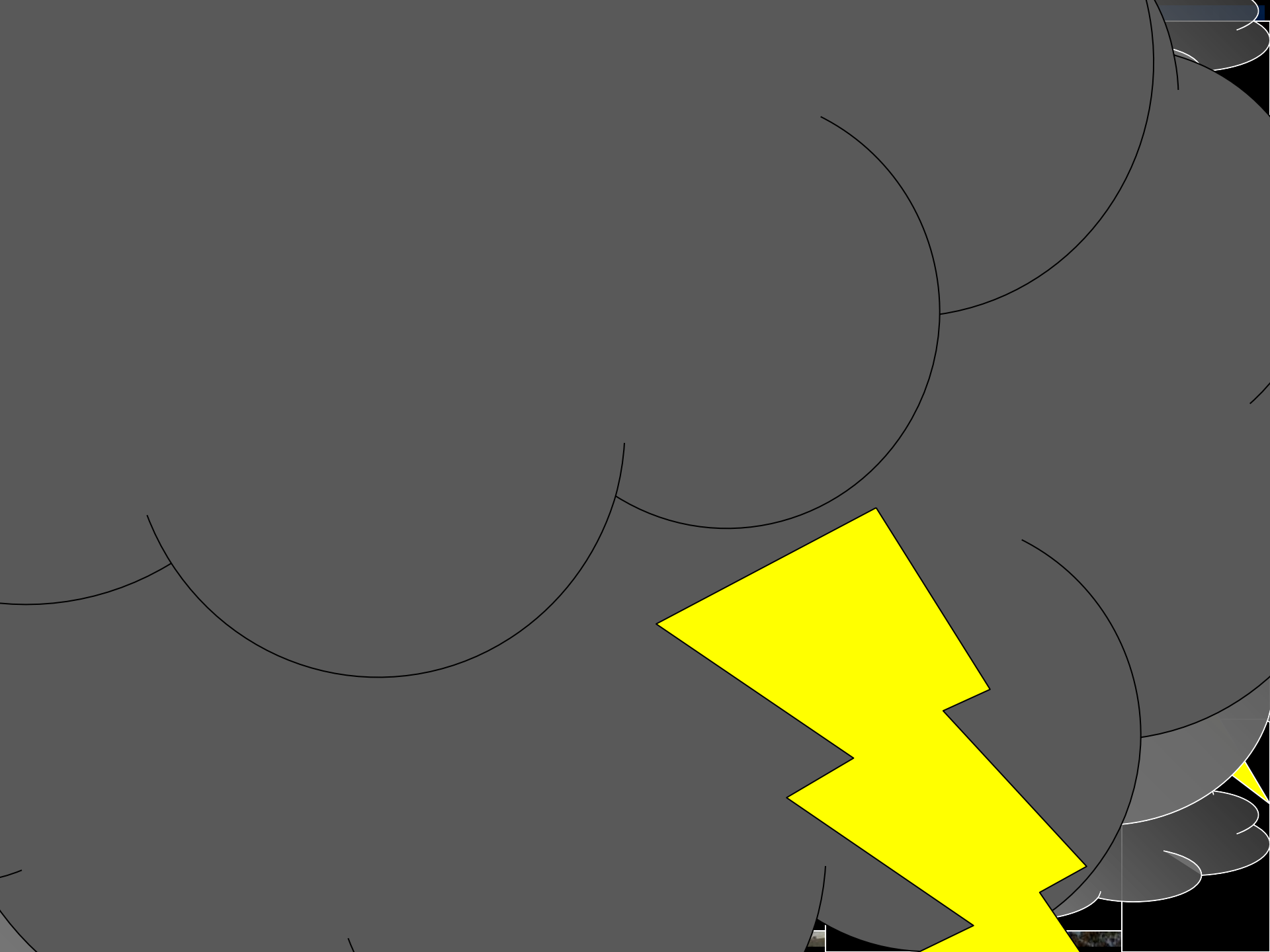
Evaporation

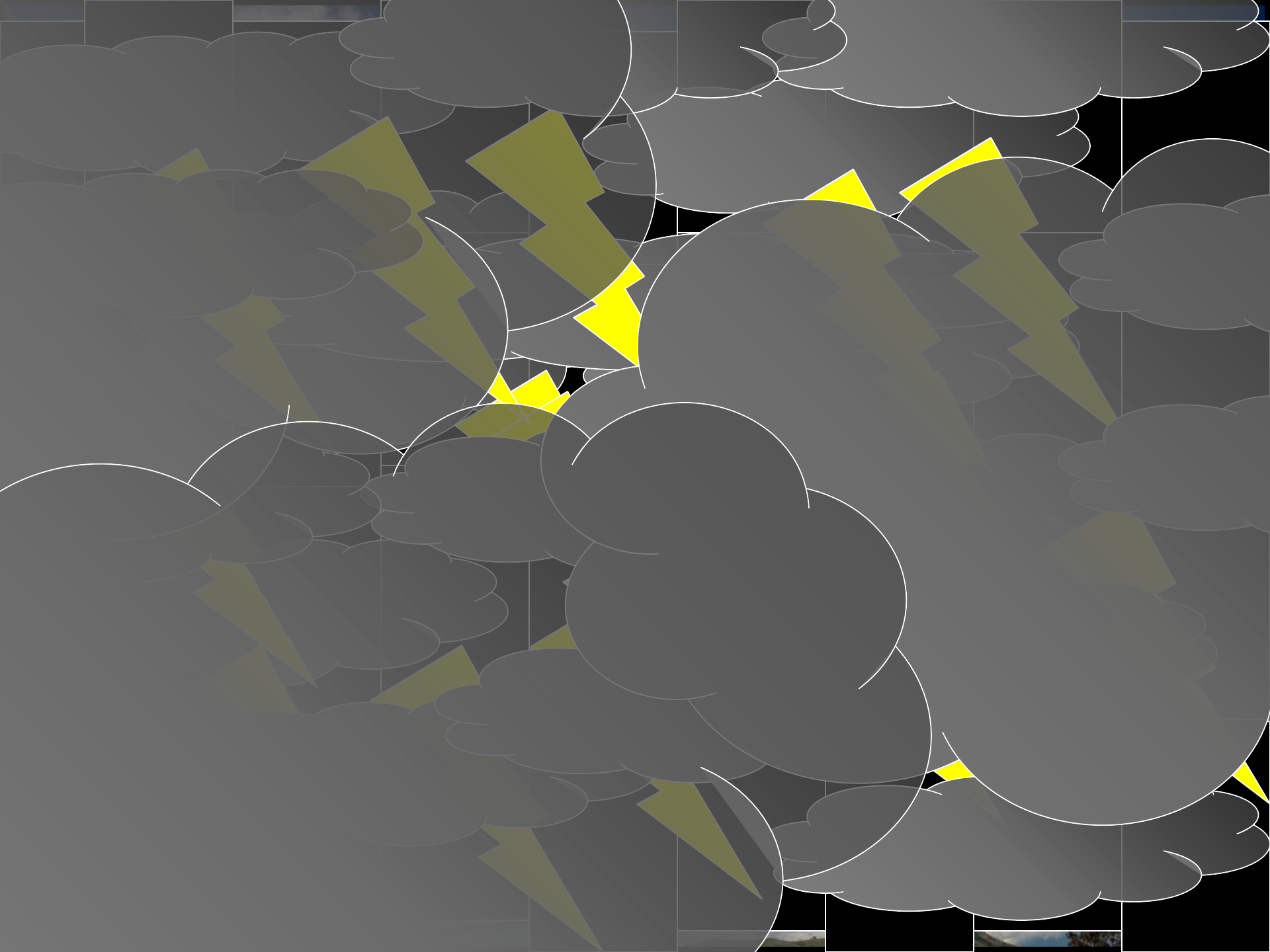
From [ ] to a [ ]

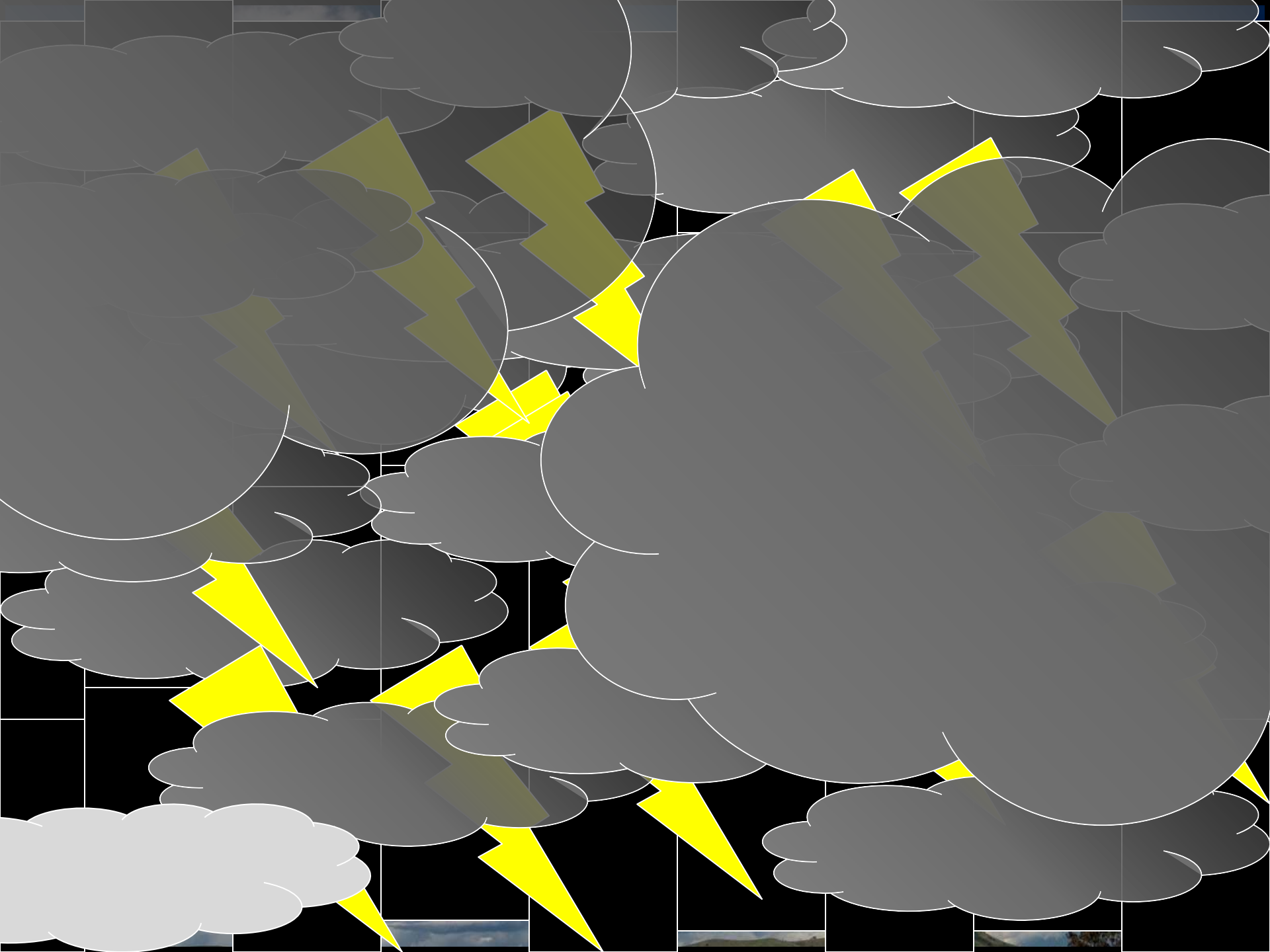
Evaporation

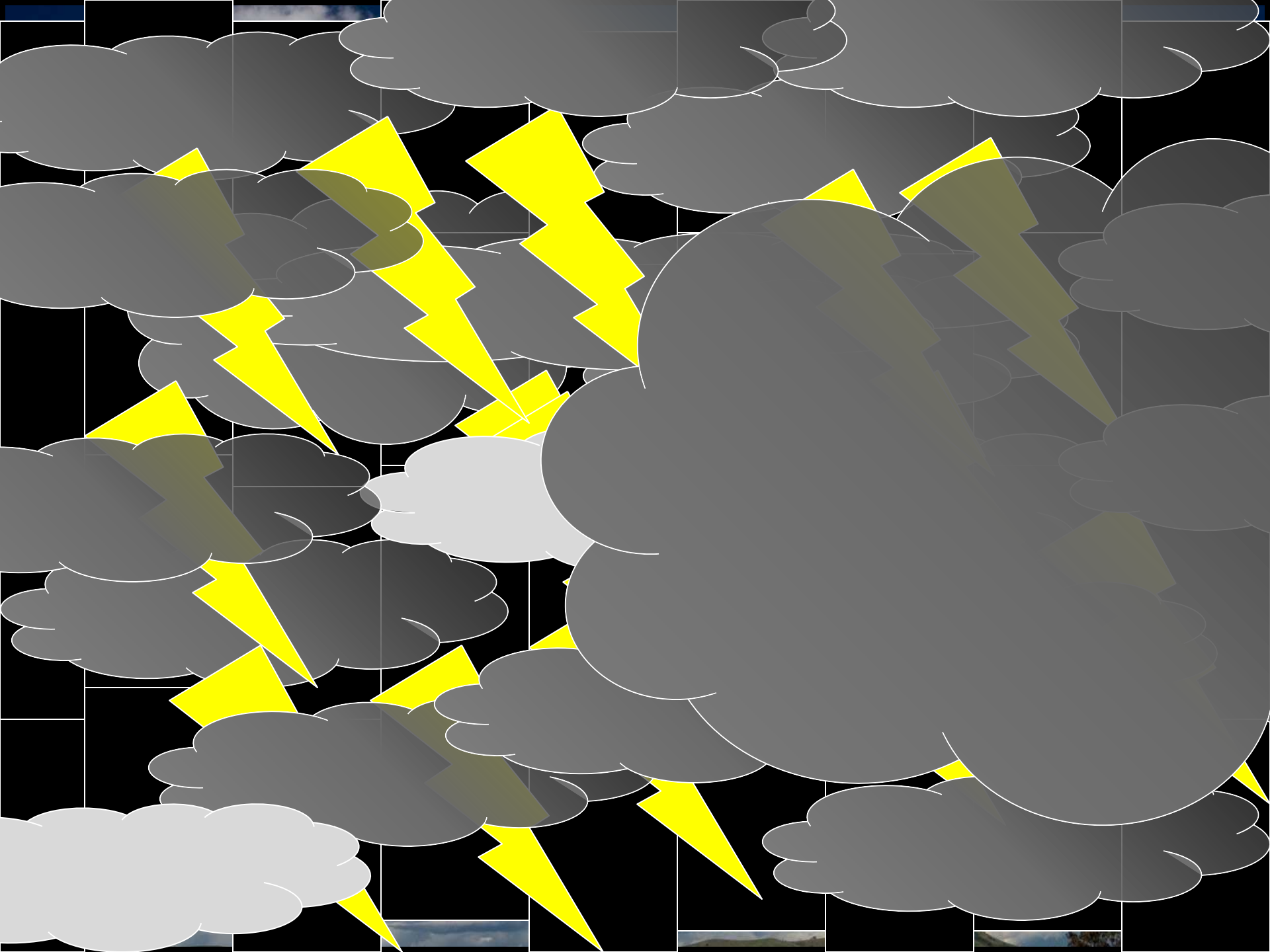
From liquid to a gas

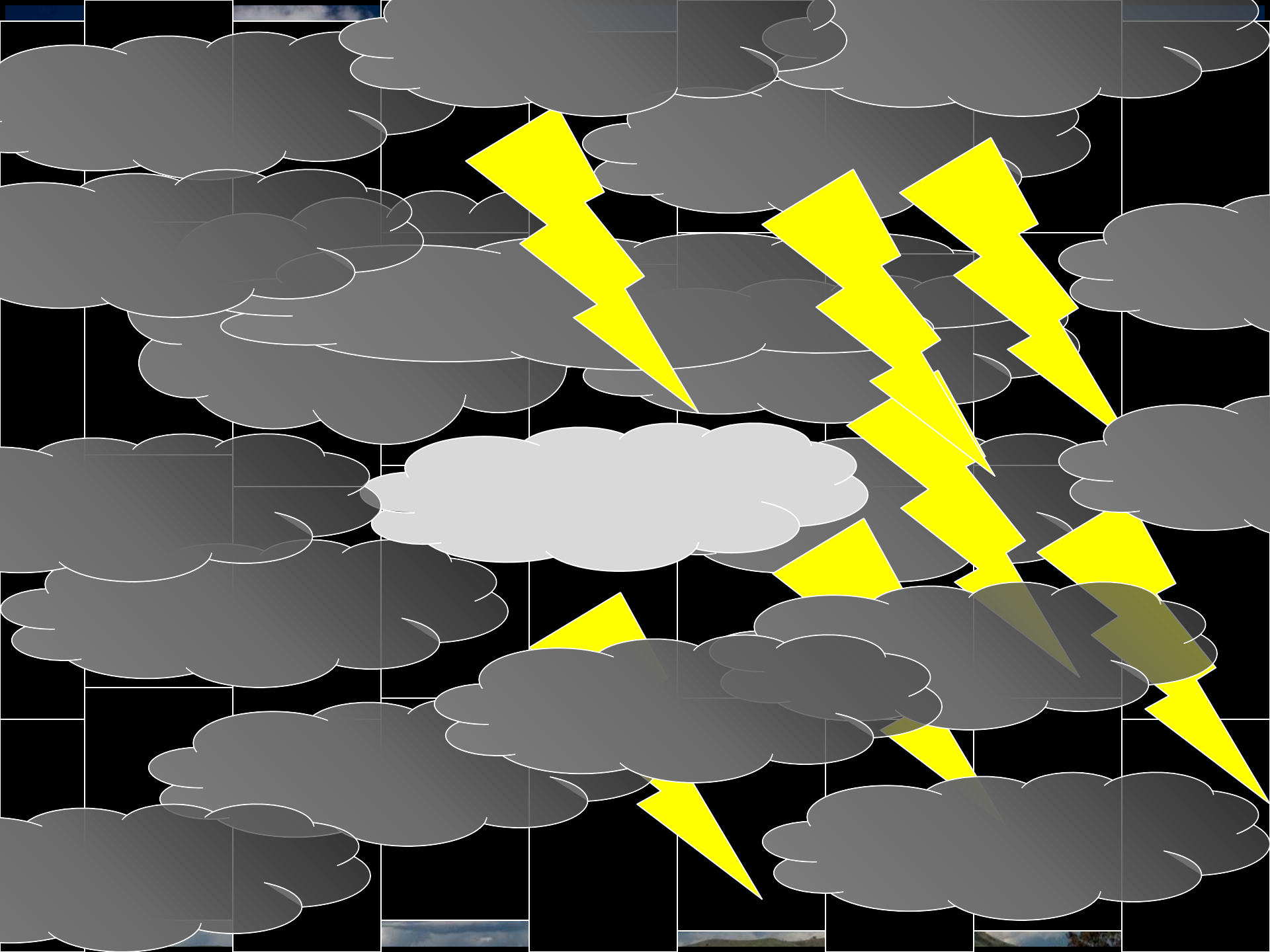
- Try and be the first to identify the image beneath the squares.
  - Raise you hand if you think you know. You only get one guess.

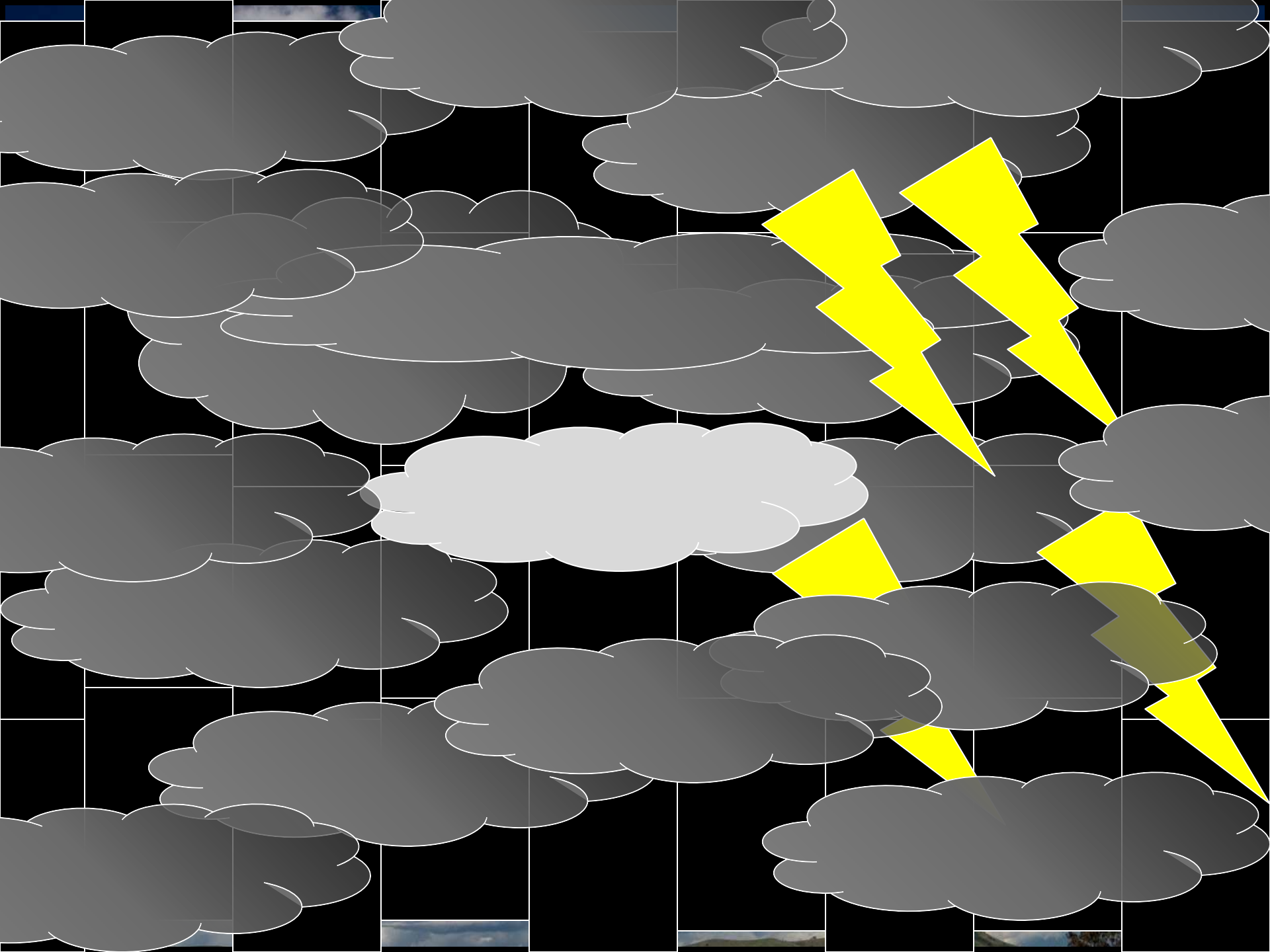


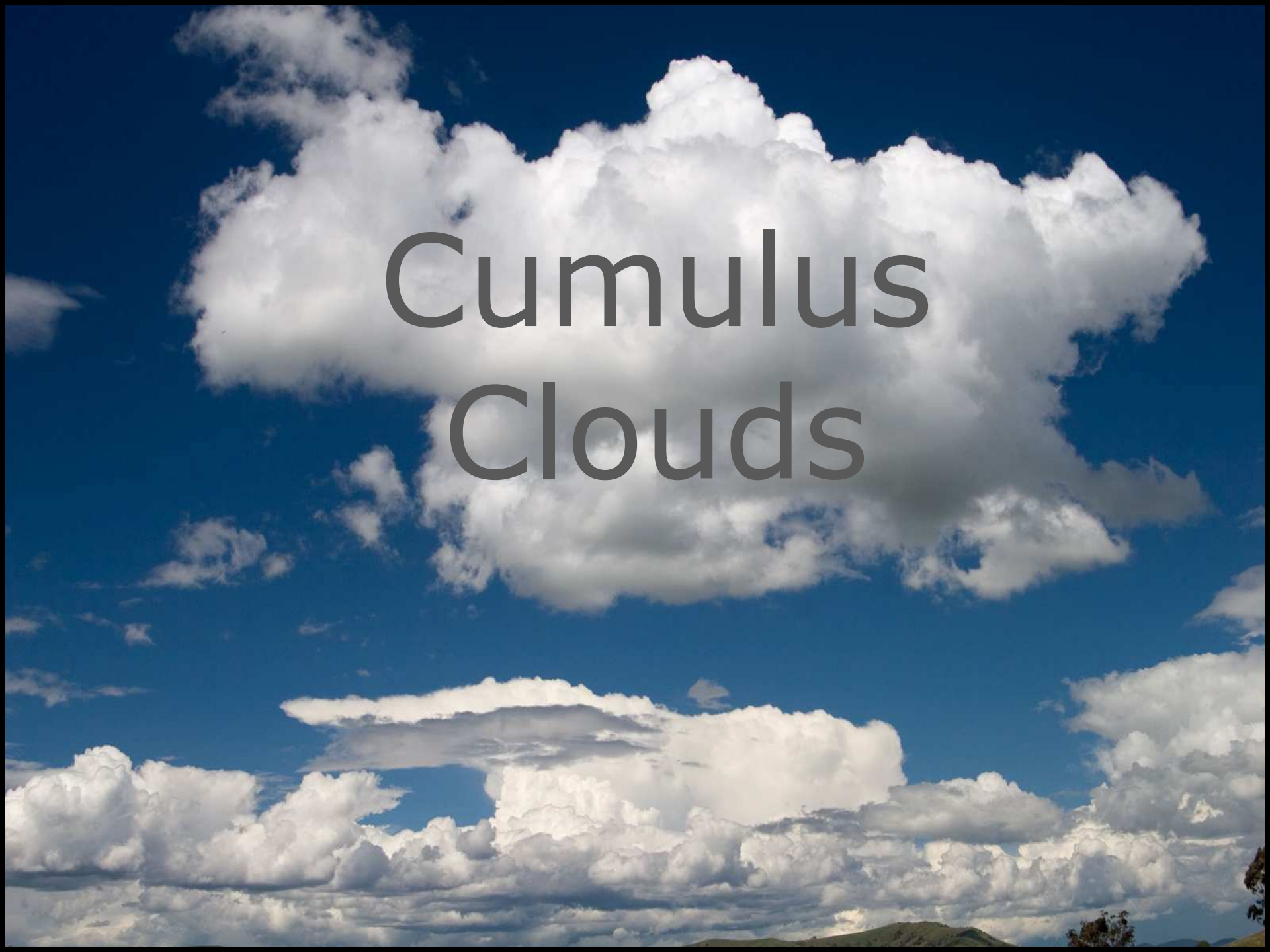


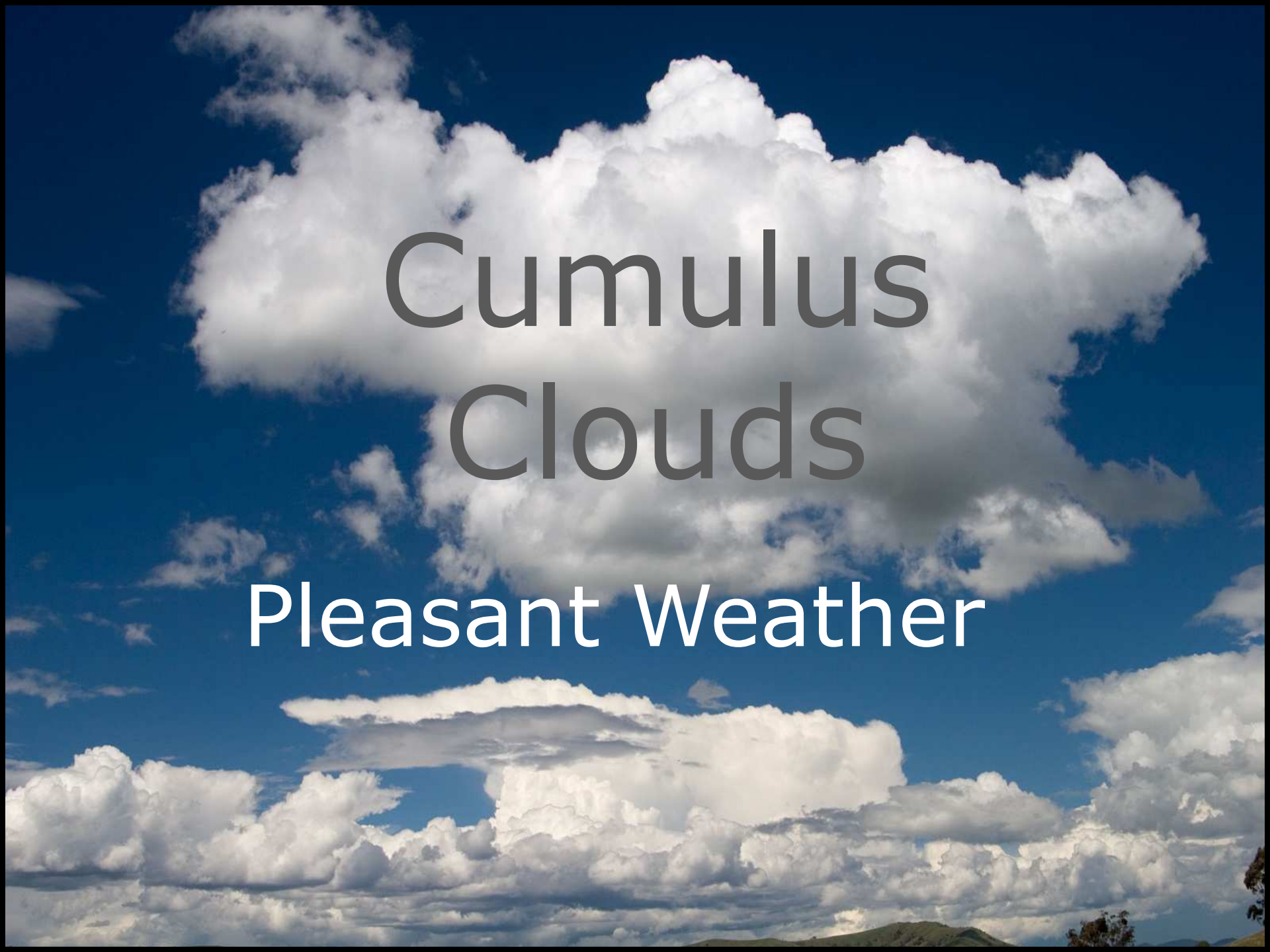




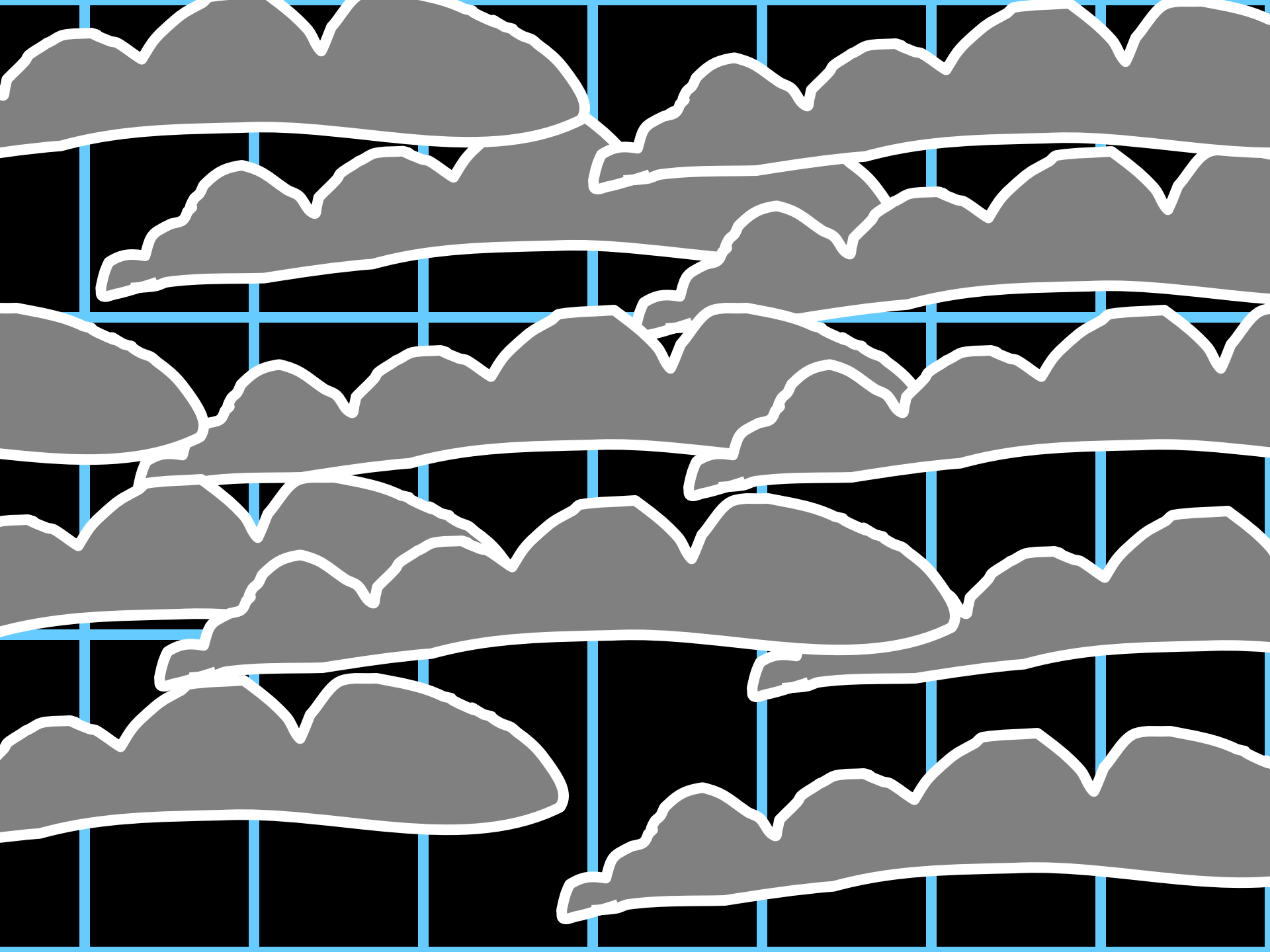


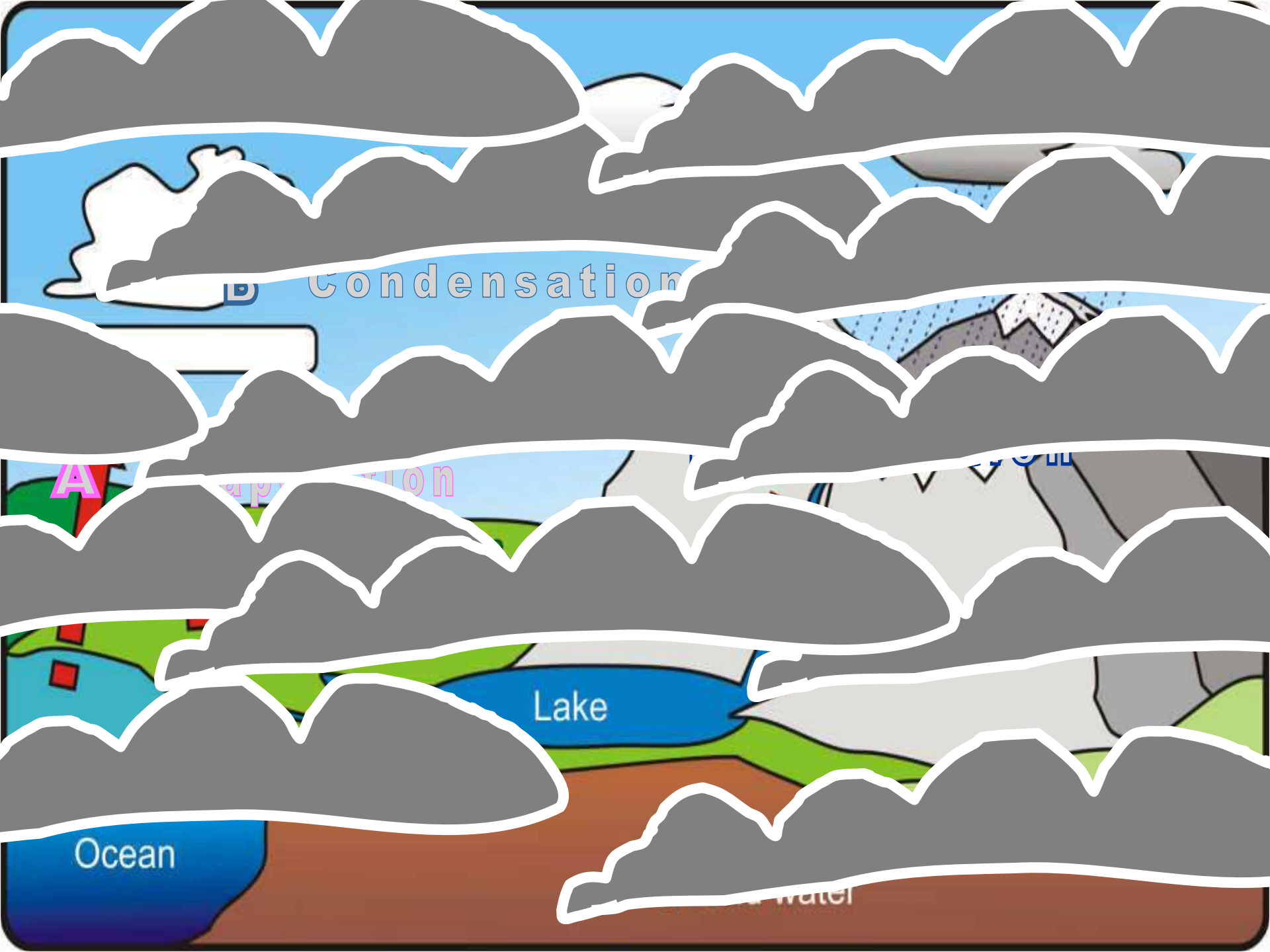


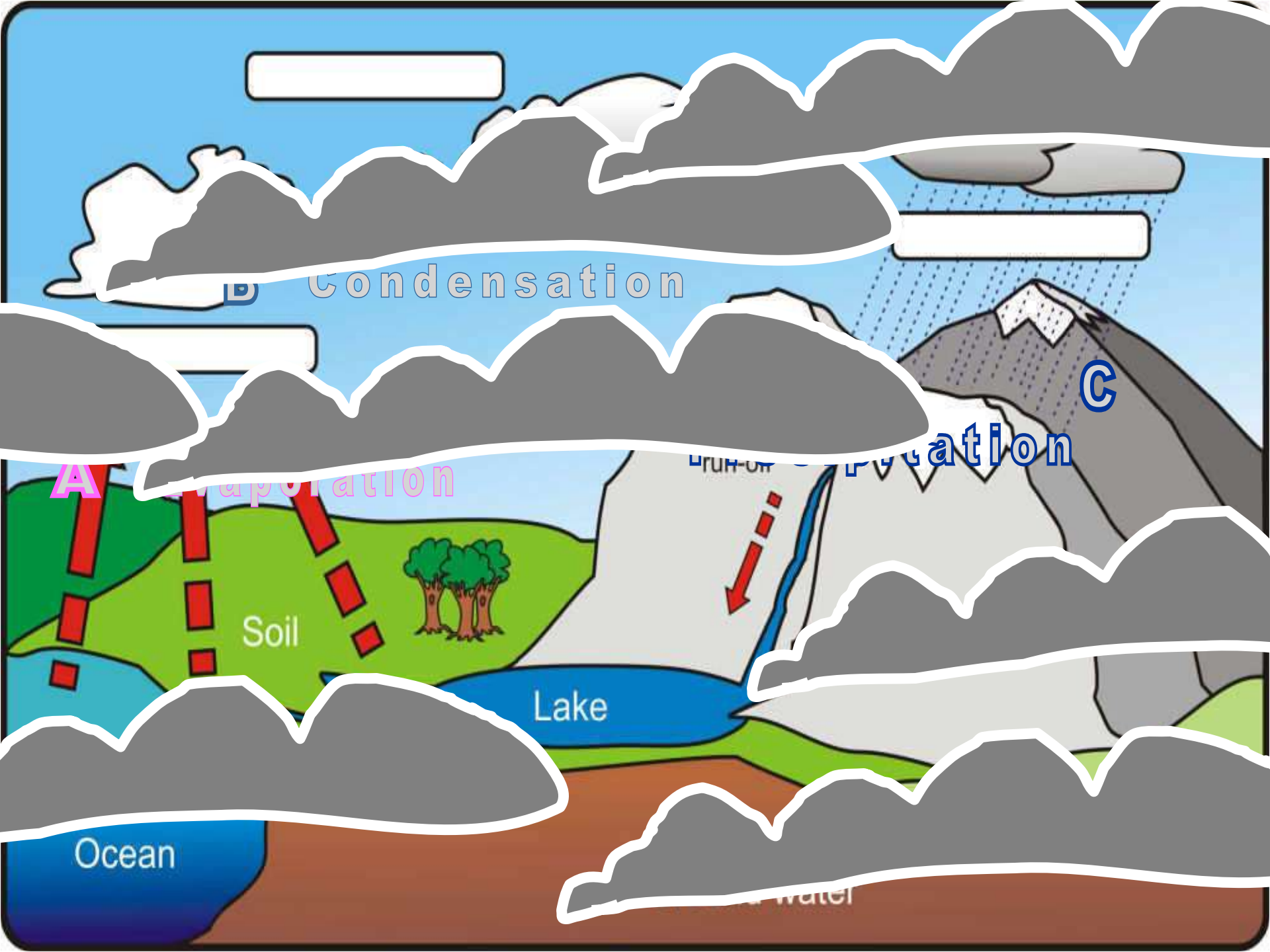

Cumulus
Clouds

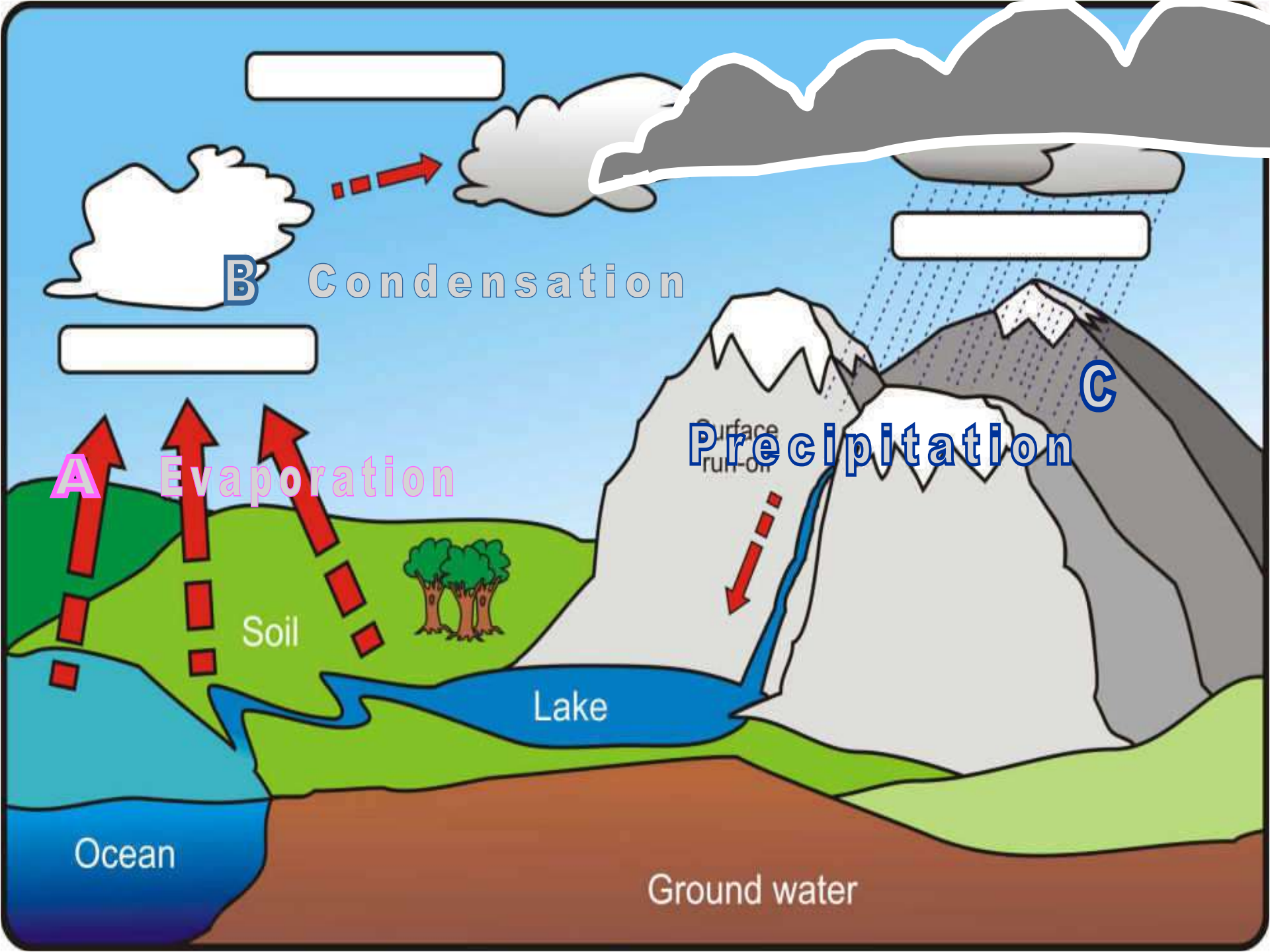

Cumulus
Clouds
Pleasant Weather

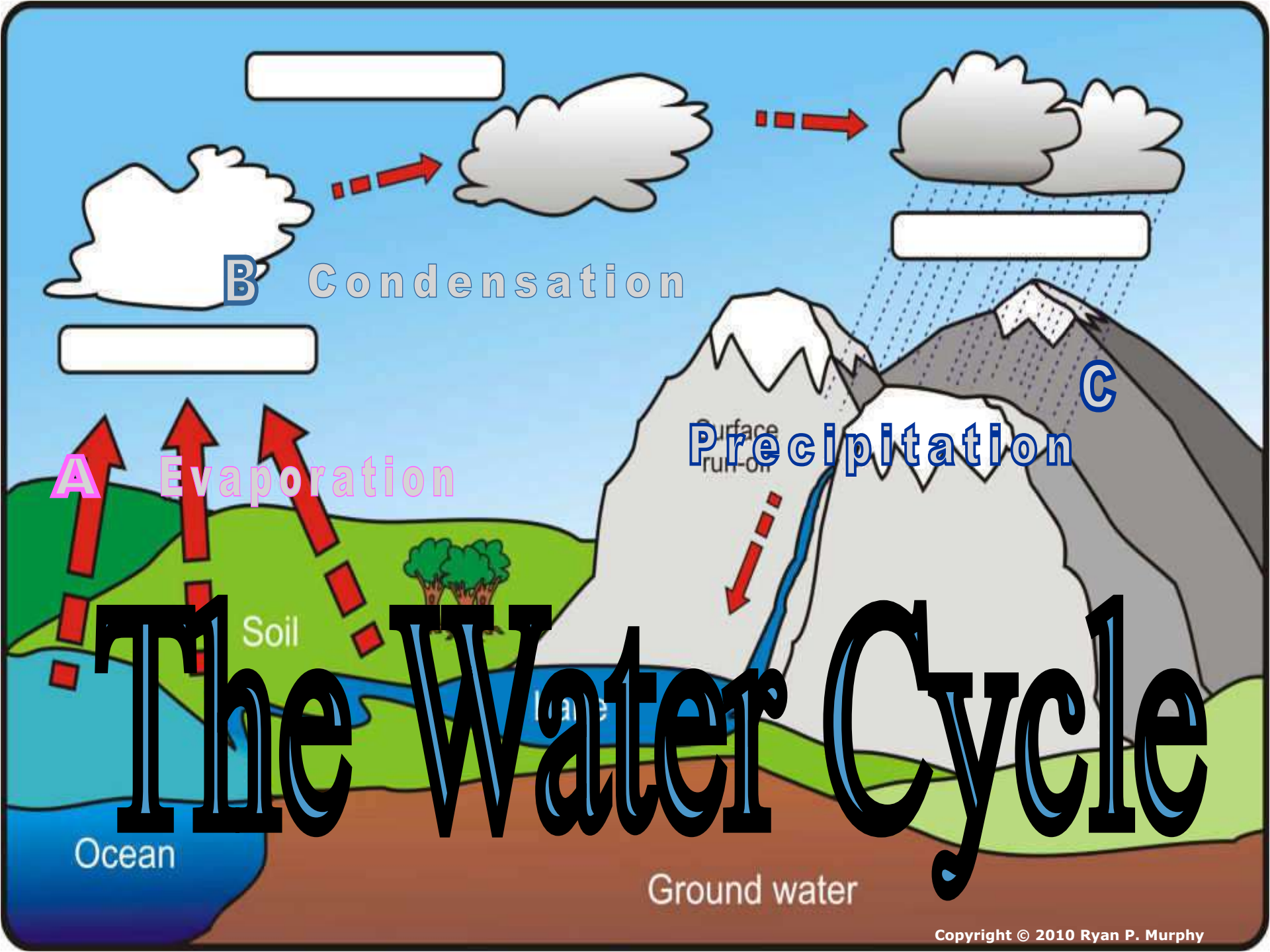
- Try Again! Be the first to identify the image beneath the squares.
  - Raise you hand if you think you know. You only get one guess.




B
Condensation
A
Lake
Ocean


B Condensation
C
A
Soil
Lake
Ocean


B
Condensation
C
Precipitation
A
Evaporation
Soil
Lake
Ocean
Ground water



- Try Again! Be the first to identify the image beneath the squares.
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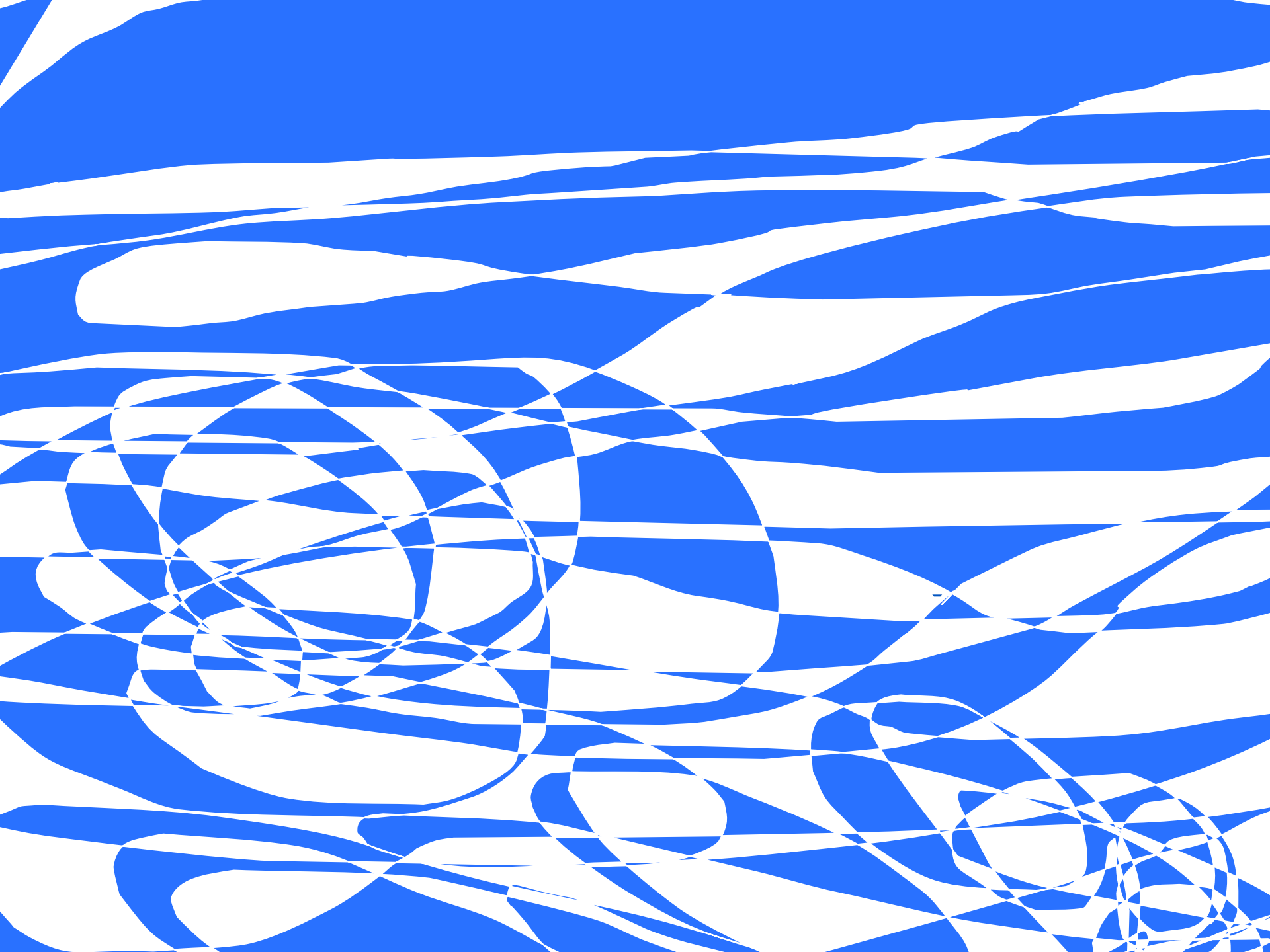
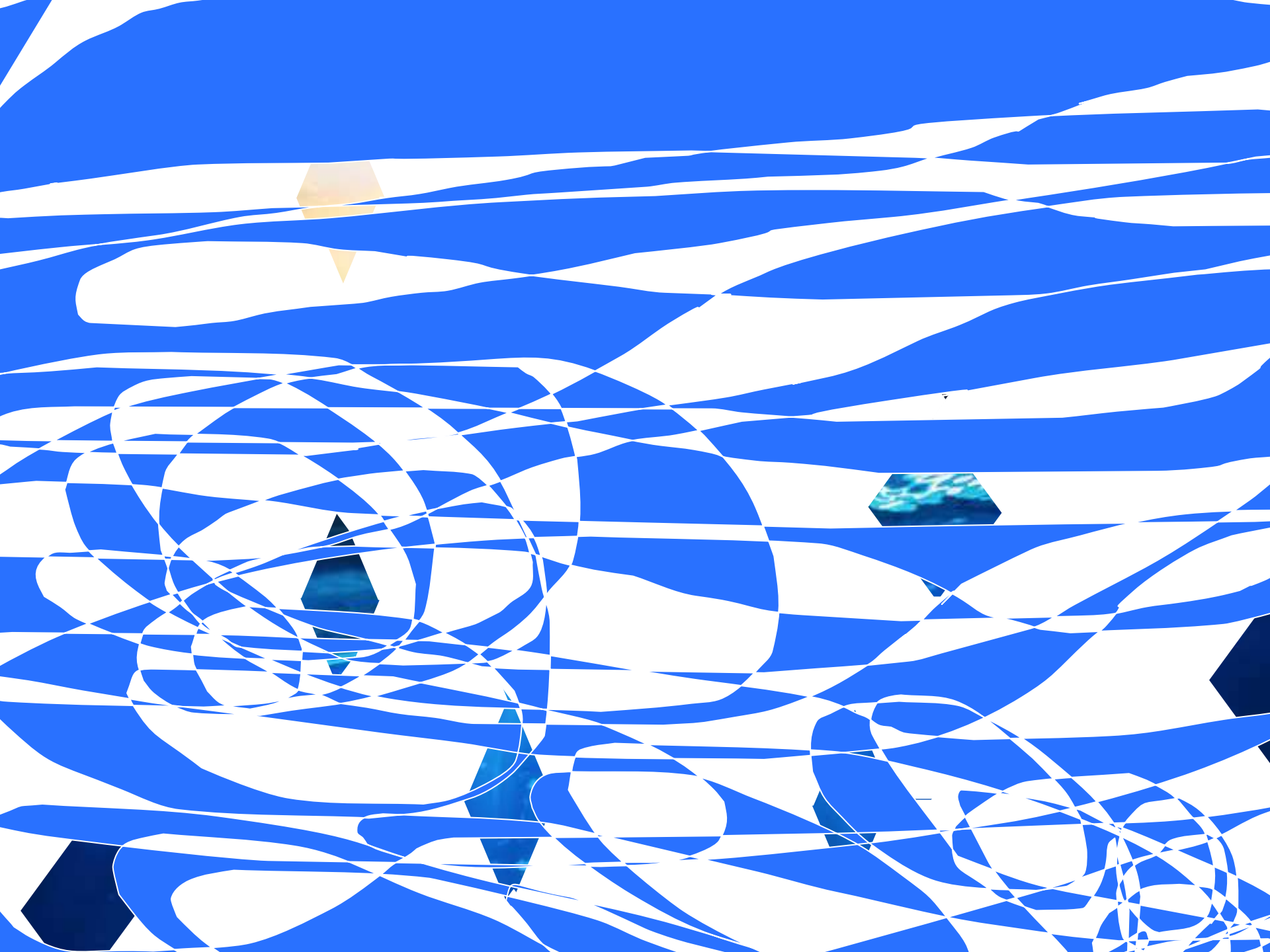
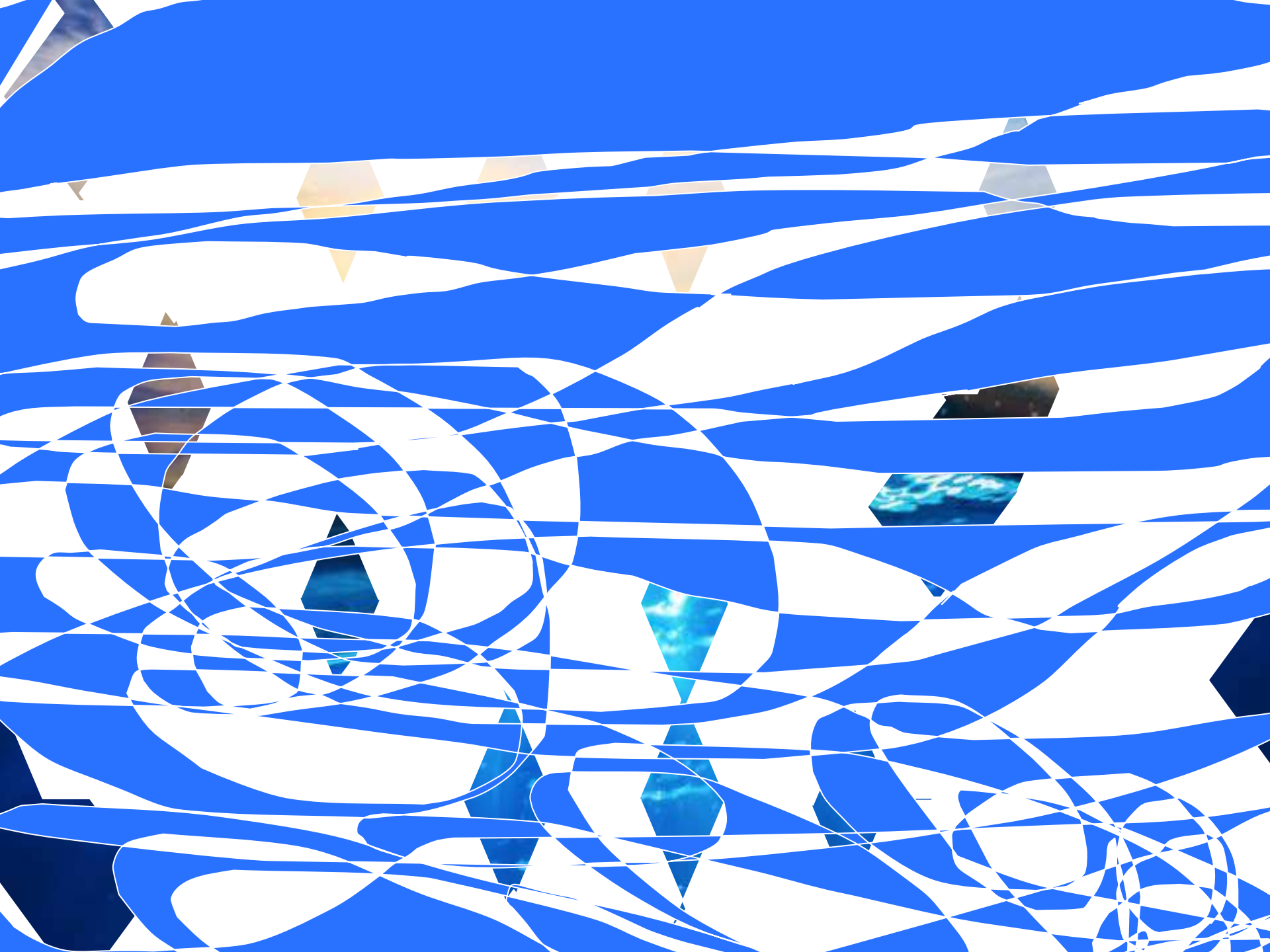
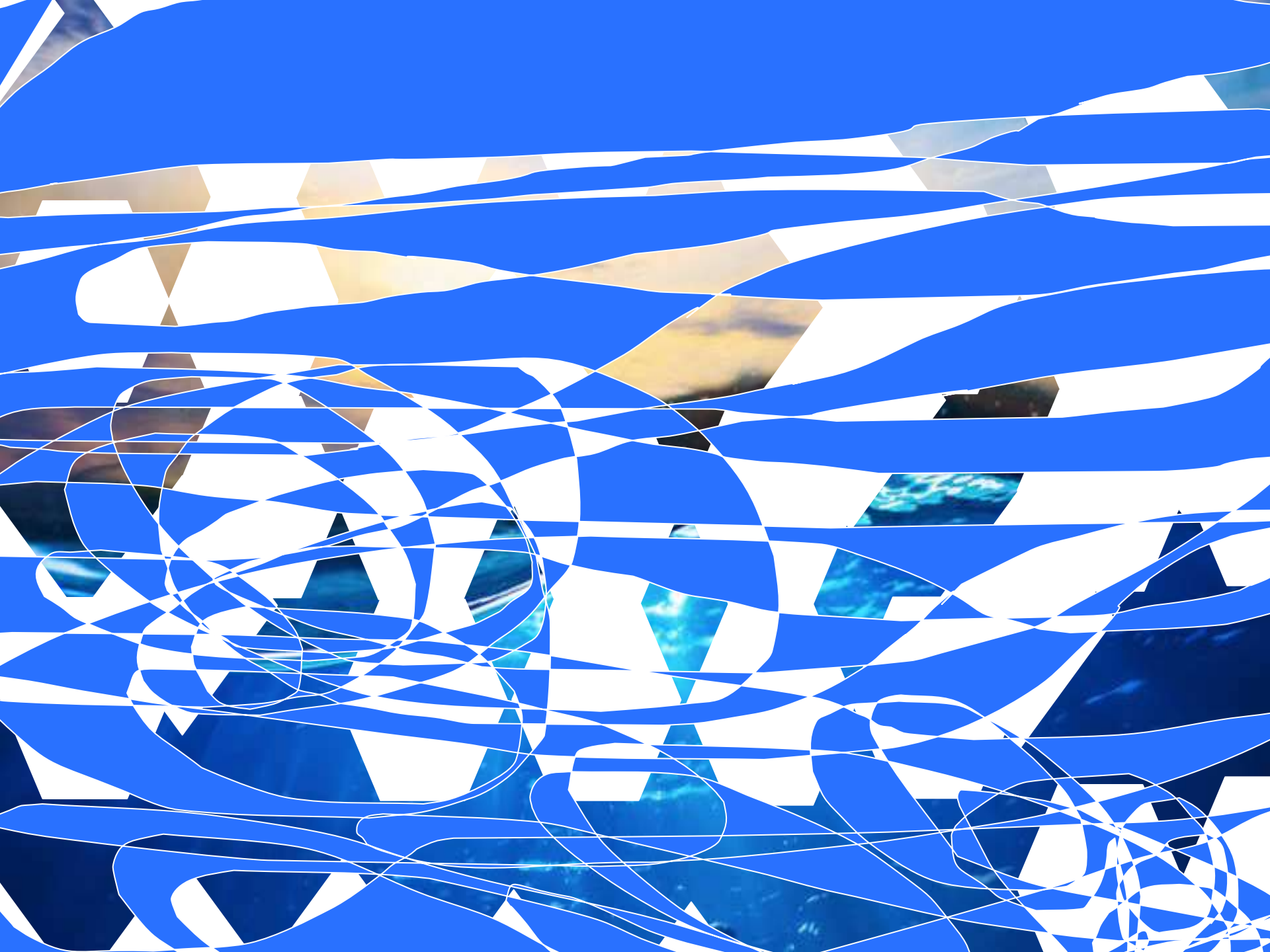
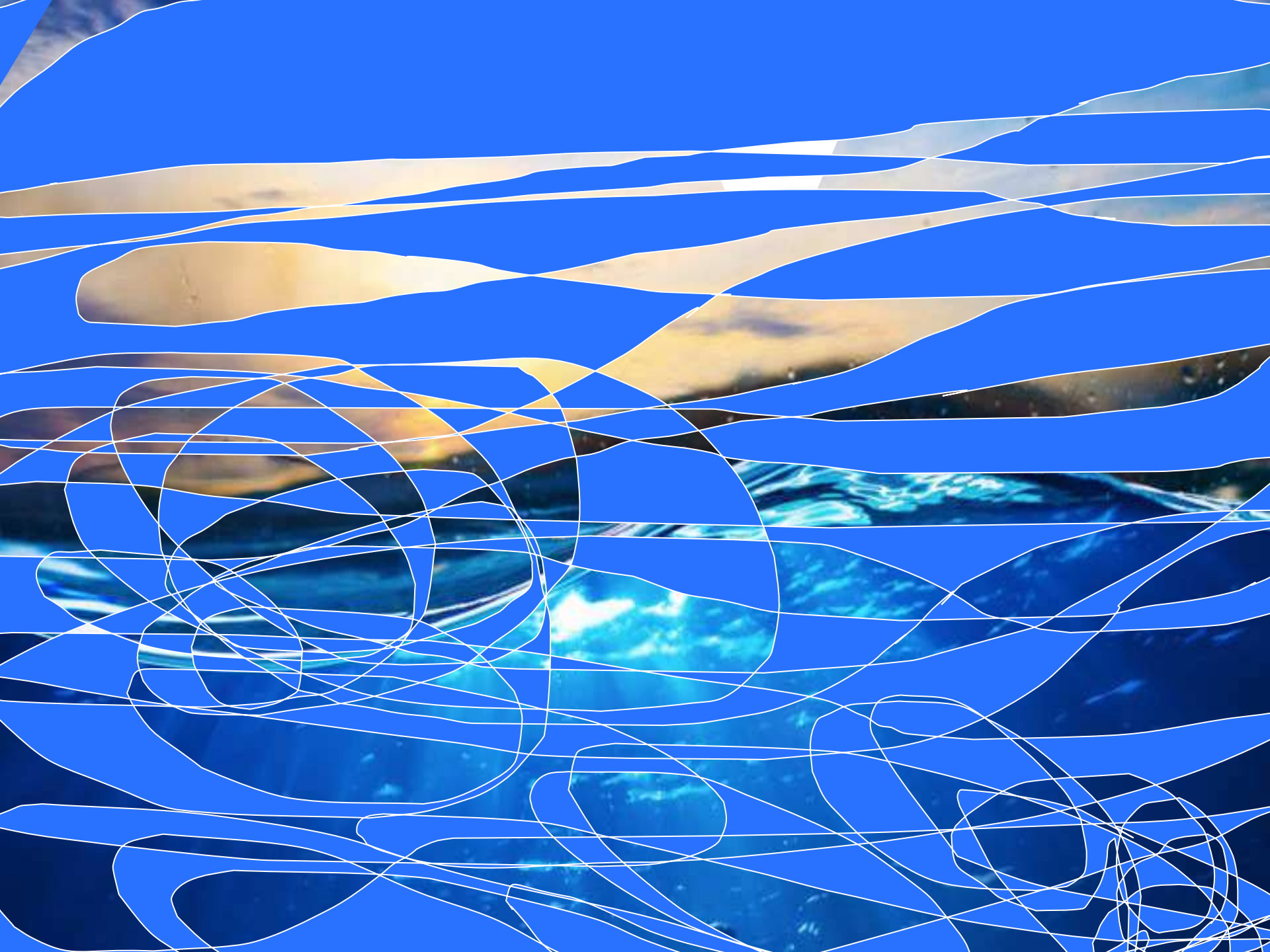








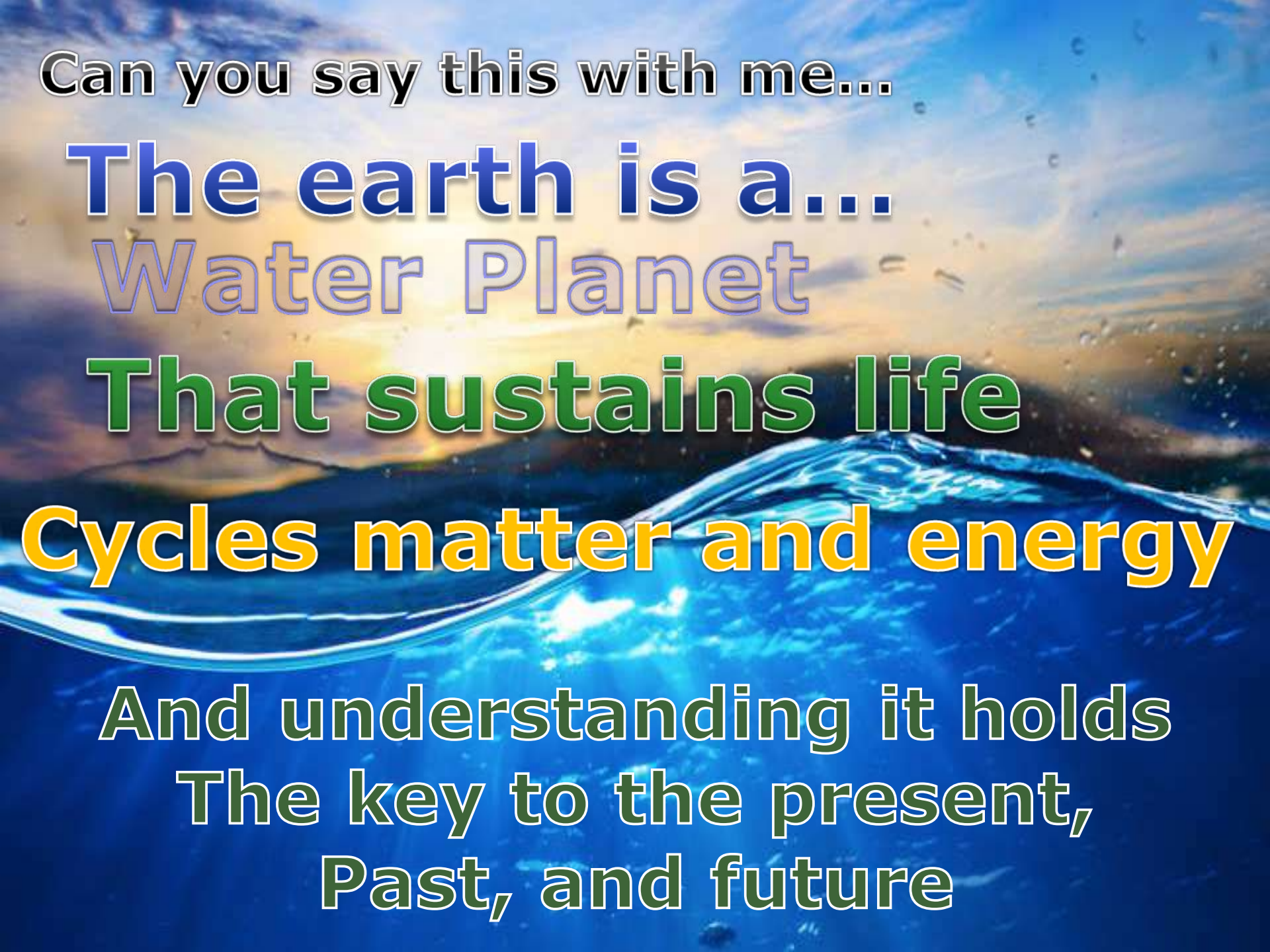


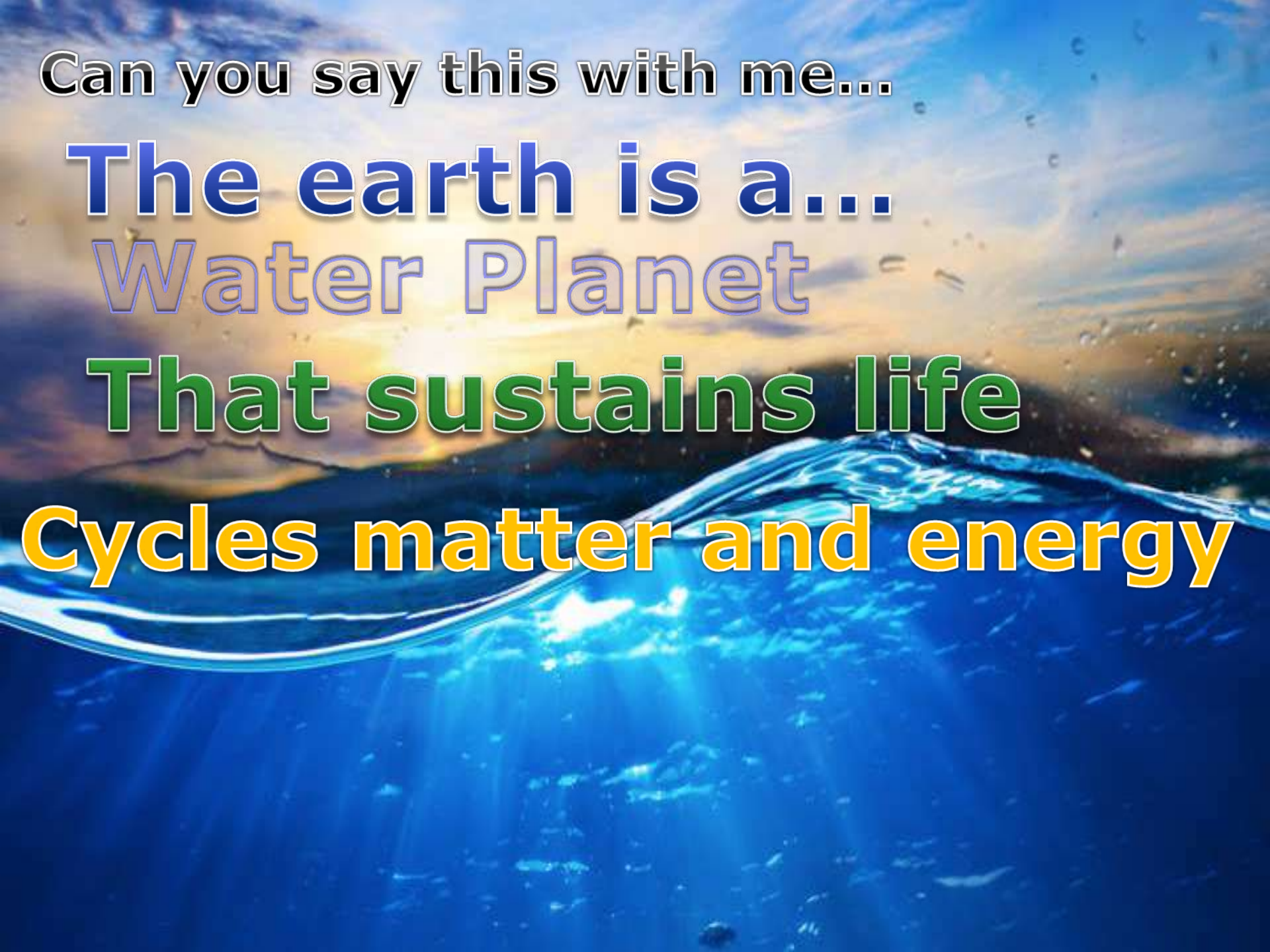

Can you say this with me...


Can you say this with me…
The earth is a…


Can you say this with me...
The earth is a...
Water Planet


Can you say this with me...
The earth is a...
Water Planet
That sustains life


Can you say this with me...
The earth is a...
Water Planet
That sustains life
Cycles matter and energy
And understanding it holds
The key to the present,
Past, and future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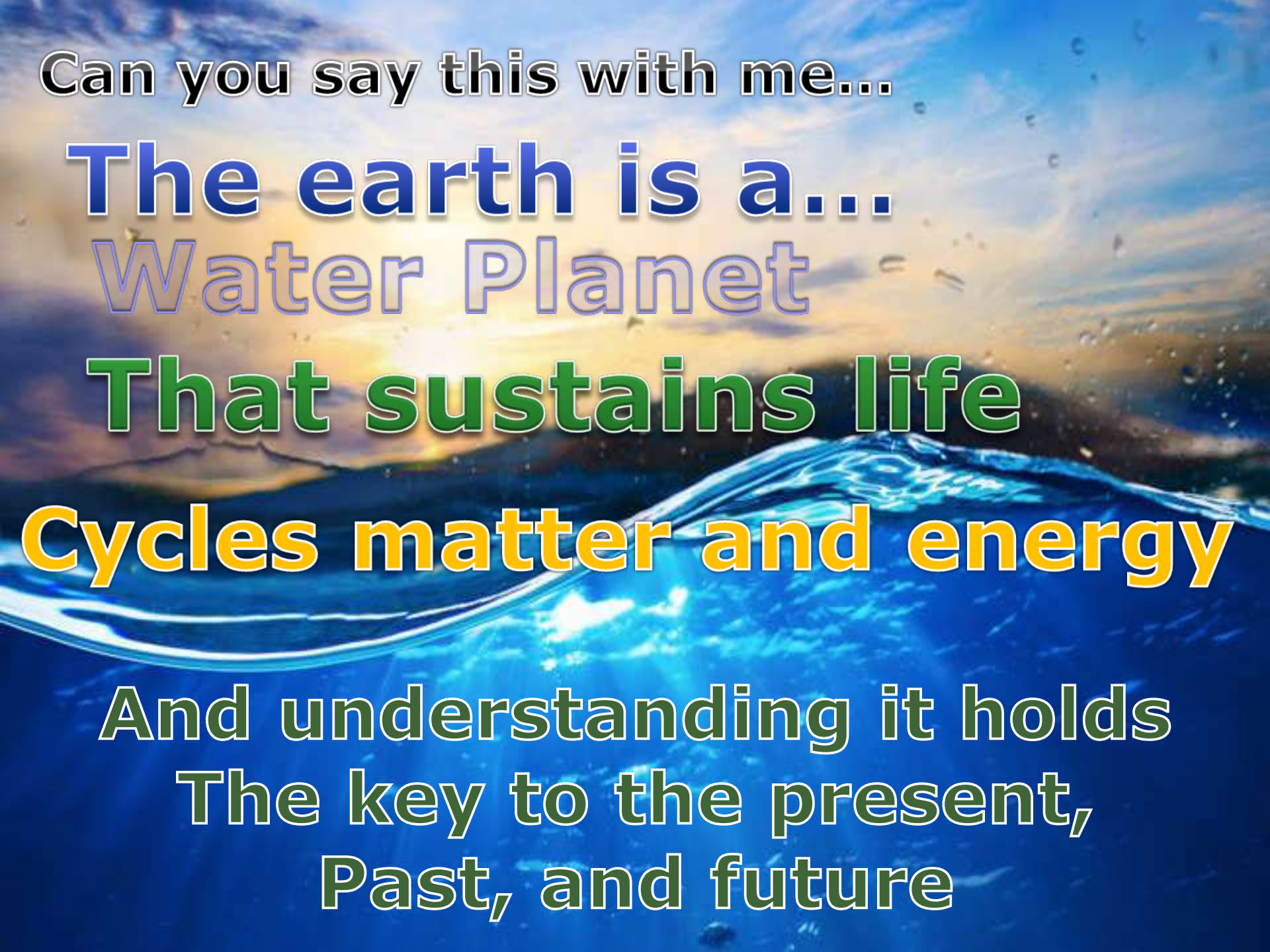
Can you say this with me...
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The key to the present,
Past, and future

• “AYE” Advance Your Exploration ELA and Literacy Opportunity Worksheet

“AYE” Advance Your Exploration / Core 6-8 **Name:**_____

Please visit at least one of the “learn more” education links provided in this unit and complete this worksheet. This worksheet is a part of your homework bundle grade.

Year

Authors Last Name, Initial, First Name:_____,___,_____ (_____)

Title of Article / Page _____

Web URL_____

Other Source Info_____

What were the central ideas in the reading? Briefly Summarize_____

Please visit at least one of the “learn more” educational links provided in this unit and complete this worksheet

How was the reading organized? _____

Did the sections help you understand the article as a whole (Y / N)?

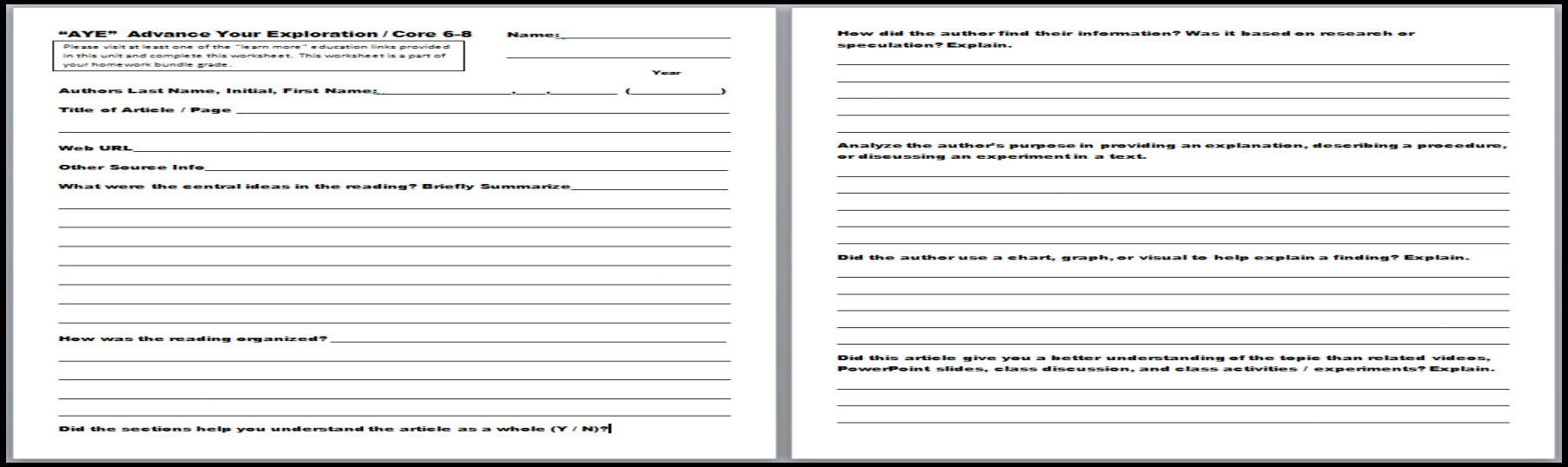
How did the author find their information? Was it based on research or speculation? Explain.

Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.

Did the author use a chart, graph, or visual to help explain a finding? Explain.

Did this article give you a better understanding of the topic than related videos, PowerPoint slides, class discussion, and class activities / experiments? Explain.

- "AYE" Advance Your Exploration ELA and Literacy Opportunity Worksheet
  - Visit some of the many provided links or..
  - Articles can be found at (w/ membership to and NSTA)
    - http://www.earthmagazine.org/
    - http://learningcenter.nsta.org/browse_journals.aspx?journal=tst



"AYE" Advance Your Exploration / Core 6-8

Please visit at least one of the "learn more" education links provided in this unit and complete this worksheet. This worksheet is a part of your homework bundle grade.

Name:_____

Year

Authors Last Name, Initial, First Name:_____.____.____ (_____)

Title of Article / Page _____

Web URL_____

Other Source Info_____

What were the central ideas in the reading? Briefly Summarize_____

How was the reading organized? _____

Did the sections help you understand the article as a whole (Y / N)?

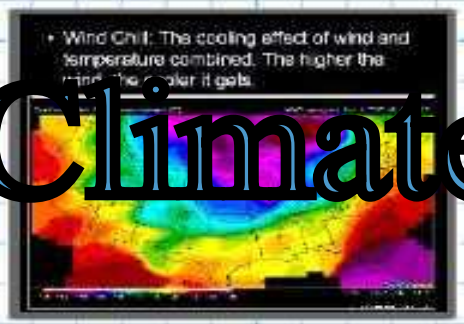
How did the author find their information? Was it based on research or speculation? Explain.

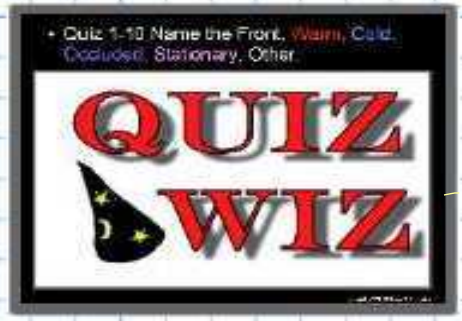
Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.

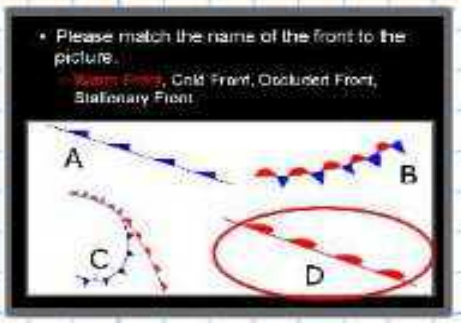
Did the author use a chart, graph, or visual to help explain a finding? Explain.

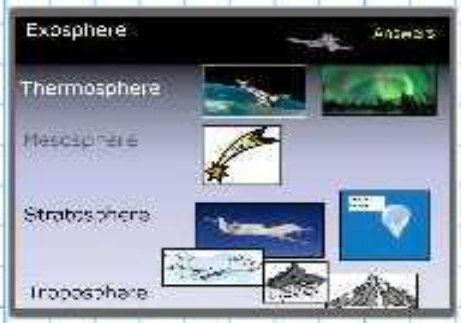
Did this article give you a better understanding of the topic than related videos, PowerPoint slides, class discussion, and class activities / experiments? Explain.

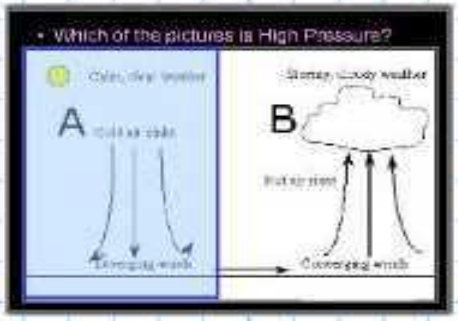
Weather and Climate Unit

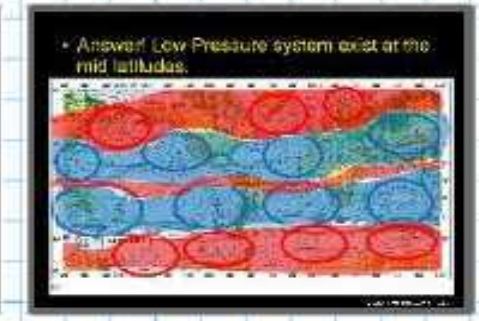


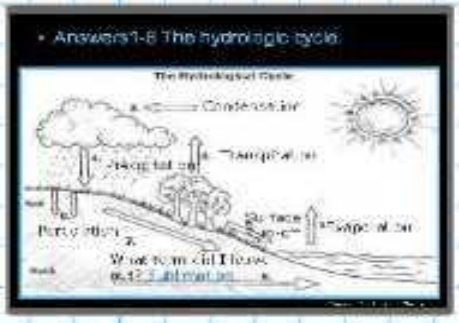


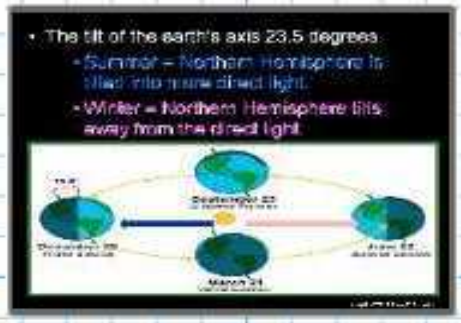












Weather and Climate Unit

Areas of Focus within The Weather and Climate Unit:
What is weather?, Climate, Importance of the Atmosphere, Components of the Atmosphere, Layers of the Atmosphere, Air Quality and Pollution, Carbon Monoxide, Ozone Layer, Ways to Avoid Skin Cancer, Air Pressure, Barometer, Air Pressure and Wind, Fronts, Wind, Global Wind, Coriolis Force, Jet Stream, Sea Breeze / Land Breeze, Mountain Winds, Mountain Rain Shadow, Wind Chill, Flight, Dangerous Weather Systems, Light, Albedo, Temperature, Thermometers, Seasons, Humidity / Water, Oceans, Roles of Oceans, El Niño, La Nina Cycle, Dew Points, Clouds, Types of Clouds, Meteorology, Weather Tools, Isotherms, Ocean Currents, Enhanced Global Warming, Greenhouse Effect, The Effects of Global Warming, Biomes, Types of Biomes.

Weather and Climate Unit on TpT

Hundreds of PowerPoint previews, the bundled homework package, unit notes, and much more can be previewed at…
Weather and Climate Unit Preview Link

Weather and Climate Unit

Areas of Focus within The Weather and Climate Unit:
What is weather?, Climate, Importance of the Atmosphere, Components of the Atmosphere, Layers of the Atmosphere, Air Quality and Pollution, Carbon Monoxide, Ozone Layer, Ways to Avoid Skin Cancer, Air Pressure, Barometer, Air Pressure and Wind, Fronts, Wind, Global Wind, Coriolis Force, Jet Stream, Sea Breeze / Land Breeze, Mountain Winds, Mountain Rain Shadow, Wind Chill, Flight, Dangerous Weather Systems, Light, Albedo, Temperature, Thermometers, Seasons, Humidity / Water, Oceans, Roles of Oceans, El Nino, La Nina Cycle, Dew Points, Clouds, Types of Clouds, Meteorology, Weather Tools, Isotherms, Ocean Currents, Enhanced Global Warming, Greenhouse Effect, The Effects of Global Warming, Biomes, Types of Biomes.

Atmosphere Lesson Bundle
Ozone Layer, Air Pollution, Skin Cancer
Atmosphere, Layers of the Atmosphere, Pollution Quiz Game
Air Pressure and Winds Lesson Bundle
Severe Weather Lesson Bundle, Hurricanes, Tornado, Blizzards
Seasons Lesson Bundle, Axial Tilt
Weather, Wind, Seasons, Quiz Game
Winds, Global Winds, Wind Chill Lesson Bundle
Oceans and Weather, Water Cycle, Clouds Lesson Bundle
Water Cycle and Clouds Lesson Bundle

Meteorology and Weather Tools Lesson Bundle
Climate Change Lesson Bundle
Climate Change, Meteorology Review Game
Biomes Lesson Bundle
Weather and Climate Quiz Game
Weather and Climate Unit in Spanish
Weather and Climate Unit Preview, Homework Bundle, Unit Notes

Topics addressed in this Unit

Areas of Focus within The Weather and Climate Unit: What is weather?, Climate, Importance of the Atmosphere, Components of the Atmosphere, Layers of the Atmosphere, Air Quality and Pollution, Carbon Monoxide, Ozone Layer, Ways to Avoid Skin Cancer, Air Pressure, Barometer, Air Pressure and Wind, Fronts, Wind, Global Wind, Coriolis Force, Jet Stream, Sea Breeze / Land Breeze, Mountain Winds, Mountain Rain Shadow, Wind Chill, Flight, Dangerous Weather Systems, Light, Albedo, Temperature, Thermometers, Seasons, Humidity / Condensation / Evaporation, Dew Points, Clouds, Types of Clouds, Meteorology, Weather Tools, Isotherms, Ocean Currents, Natural Causes of Climate Change, History of Climate, Ice Ages and Theories, Human Created Climate Change / Global Warming, Greenhouse Effect, The Effects of Global Warming, Biomes, Types of Biomes.

NGSS Standards 5

5-PS1.1 (Develop a model that matter is made of particles too small be seen).
5.ESS2.1 (Develop an example to describe ways the geosphere, biosphere, hydrosphere, and atmosphere interact).

NGSS Standards MS

MS.ESS2.4 (Create a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity).
MS.ESS2.5 (Gather data to show how the motion and complex interaction of air masses results in change in weather conditions).
MS.ESS2.6 (Create a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates).
MS.ESS2.5 (Ask clarifying questions based on evidence of the factors that have caused the rise in global temperatures over the past century).
MS.ESS3.2 (Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects).

NGSS Standards HS

HS.ESS2.4 (Use a model to describe how variations in the flow of energy into and out the Earth's systems result in changes in climate).

HS.ESS3.5 (Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.

HS.ESS3.1 (Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity).

Additional Standards Addressed

- *Organize observations and data into tables, charts and graphs.*
- *Explain the composition and structure of the Earth's atmosphere.*
- *Describe how clouds affect weather and climate, including precipitation, reflecting light from the sun, and retaining heat energy emitted from the Earth's surface.*
- *Identify and describe the impact certain factors have on the Earth's climate, including changes in the oceans' temperature, changes in the composition of the atmosphere, and geological shifts due to events such as volcanic eruptions and glacial movements.*

Additional Standards Addressed

- *Keep a journal record of observations, recognizing patterns, summarizing findings, and reflecting on the observations.*
- *Describe and make predictions about local and regional weather conditions using observation and data collection methods.*
- *Identify weather patterns by tracking weather related events, such as hurricanes.*
- *Explain the composition and structure of the Earth's atmosphere;*
- *Describe weather in terms of temperature, wind speed and direction, precipitation, and cloud cover;*
- *Describe how clouds affect weather and climate, including precipitation, reflecting light from the sun, and retaining heat energy emitted from the Earth's surface.*
- *Recognize that images taken of the Earth from space can show its features, and any changes in those features that appear over time;*
- *Explain that satellites can be used to view and track storms and Earth events, such as hurricanes and wild fires.*
- *Recognize that things change in steady, repetitive, or irregular ways, or sometimes, in more than one way at the same time;*
- *Recognize how the tilt of the Earth's axis and the Earth's revolution around the Sun affect seasons and weather patterns;*
- *Identify and describe seasonal, daylight and weather patterns as they relate to energy.*
- *Recognize that satellites and Doppler radar can be used to observe or predict the weather.*
- *Employ knowledge of basic weather symbols to read and interpret weather and topographic maps.*
- *Read and interpret data from barometers, sling psychrometers and anemometers.*
- *Recognize that weather conditions change frequently, and that weather patterns change over the seasons.*
- *Describe and compare weather using observations and measurements of local weather conditions.*

Additional Standards Addressed

- *Explain how water exists in the atmosphere in different forms and describes how it changes from one form to another through various processes such as freezing, condensation, precipitation and evaporation.*
- *Explain that air surrounds the Earth, it takes up space, and it moves around as wind.*
- *Based on data collected from daily weather observations, describe weather changes or weather patterns.*
- *Explain how the use of scientific tools helps to extend senses and gather data about weather (i.e., weather/wind vane– direction; wind sock– wind intensity; anemometer– speed; thermometer– temperature; meter sticks/rulers– snow depth; rain gauges– rain amount in inches).*
- *Recognize that solid rocks, soils, and water in its liquid and solid states can be found on the Earth's surface.*
- *Recognize that water can be a liquid or a solid; and explain that it can be made to change from one state to the other, but the amount (mass) of water always remains the same in either state.*
- *Describe how catastrophic changes that have taken place on the Earth's surface can be revealed by satellite images.*
- *Explain the role of differential heating or convection in ocean currents, winds, weather and weather patterns, atmosphere, or climate.*
- *Recognize that satellites and Doppler radar can be used to observe or predict the weather.*
- *Employ knowledge of basic weather symbols to read and interpret weather*
- *Read and interpret data from barometers, sling psychrometers and anemometers.*
- *Describe how man uses land-based light telescopes, radio telescopes, satellites, manned exploration, probes and robots to collect data.*
- *Describe how Earth's atmospheric composition has changed from the formation of the Earth through current time.*
- *Use a variety of tools and formats (oral presentations, journals, and multimedia presentations) to summarize and communicate the results of observations.*
- *Organize observations and data into tables, charts and graphs.*

- This PowerPoint is one small part of my Weather and Climate Unit that I offer on TpT This unit includes…
  - A 5 part 4,000+ slide PowerPoint roadmap.
  - 16 page bundled homework and modified version that follows slideshow with answer key.
  - 19 pages of unit notes with visuals
  - 25+ video links, four PowerPoint review games, rubrics, materials, list, curriculum guide, follow along worksheets, and much more.

- Weather and Climate Unit on TpT

- Hundreds of PowerPoint previews, the bundled homework package, unit notes, and much more can be previewed at…
- Weather and Climate Unit Preview Link

Curriculum Guide

Difficulty Rating 1/10 (10 is Most Difficult)

5th or 6th or 7th Grade Year

Ecology: Feeding Levels Unit	4/10	(Life Science Ecology)
Ecology: Interactions Unit	5/10	(Life Science Ecology)
Water Molecule Unit	5/10	(Earth Science Water Topics)
Ecology: Abiotic Factors Unit	6/10	(Life Science Ecology)
Botany Unit	6/10	(Life Sciences)
Evolution / Change Topics Unit	7/10	(Life Science Ecology)
Rivers, Lakes, and Water Quality Unit	6/10	(Earth Science Water Topics)
Soil Science and Ice Ages Unit	6/10	(Earth Sciences)

6th or 7th or 8th Grade Year

Introduction to Science Unit	7/10	(Physical Science Concepts)
Astronomy Unit	7/10	(Earth Sciences)
Geology Topics Unit	7/10	(Earth Sciences)
Weather and Climate Unit	7/10	(Earth Sciences)
Classification and Taxonomy Unit	8/10	(Life Sciences)
Human Body and Health Topics Unit	8/9/10	(Life Science / Health)

8th / 9th / 10th Year

Motion and Machines Unit	8/10	(Physical Sciences)
Matter, Energy, and the Environment Unit	8/10	(Physical Sciences)
Atoms and Periodic Table Unit	9/10	(Physical Sciences)
Infectious Diseases Unit	8/10	(Life Sciences)
Cellular Biology Unit	9/10	(Life Sciences)
DNA and Genetics Unit	9/10	(Life Sciences)

Warning

Please view all PowerPoint Slideshows, video links, academic links, and review games prior to using them in your classroom. Some images may be inappropriate for some students. The more difficult units for the older kids tend to have more powerful images on them. Usually there is a warning built into the slideshow, but as the teacher, you decide what you want your students to see. Please delete any slides that you feel uncomfortable with prior to viewing with your students. Thank you.

Disclaimer

The user shall determine the suitability of the product for his or her intended use and shall assume all risk and liability in connection therewith. In no event will Ryan P. Murphy / Science from Murf LLC or sciencepowerpoint.com. be liable for any loss or damage, indirect or consequential loss or damage of any kind to yourself or a student, personal or emotional injury, or any loss or damage whatsoever arising from the use of any lesson, lab activities within the lesson, video link, or in connection with, the use of this curriculum, units, and lessons their within.

Copyright

Return Policy

If you are unhappy with your purchase please contact me so I can offer you a full refund. I would appreciate your feedback so I can improve this curriculum. If a flash drive was delivered the refund will reflect a minor deduction ($10) for that expense unless you want to mail it back to me.

- Please open the welcome / guide document on each unit preview.
  - This document will describe how to utilize these resources in your classroom and provide some curriculum possibilities.

PowerPoint Slideshows

Teacher should have a version of PowerPoint on their computer or Keynote for Mac which is compatible. Classroom teachers should also have an LCD projector. I have modified my wall using white poster boards to create a wall size viewing area. The larger you can create a screen the better. Having a remote slide advancer with optional laser pointer is very helpful as most of the units have thousands of slides. I put many elastic bands around my remote presenter because you will eventually drop it and they tend to break easily. Teaching without the remote will limit your mobility and take lots of extra time and travel.

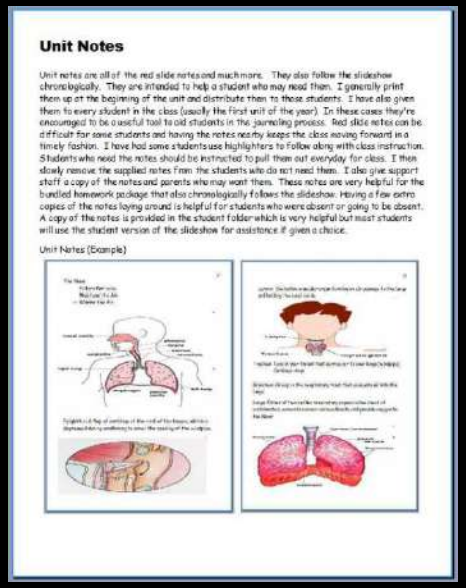
Each unit comes with a multi-part PowerPoint slideshow. The parts are labeled Part I, Part II, etc., and will chronologically guide you through an entire unit of study. A bundled homework package, unit notes, available worksheets, and more support the slideshow. A slide within the PowerPoint roadmap alerts the students and teacher of activity sheets, video links, homework checks, review games, and much more. I've tried to make everything in the unit chronological.

There are two types of slides, red slides and black slides. Both have value but red slides are considered critical class notes. A slide at the beginning of the unit describes how these slides should be recorded in the students' journal neatly. These slides are very important for the bundled homework package and are usually important definitions or concepts. Class notes which are all of the red slides and more can be found in the folders and distributed to the students who struggle with note taking. Black slides have many purposes and students should pay attention and complete tasks as described.

Many links are provided to view videos, visit websites, take quizzes, and much more. Computers should have access to the internet. Many of the videos direct you to YouTube. If your school blocks YouTube you will need to visit those videos and download them from a home computer.

Red Slide Note

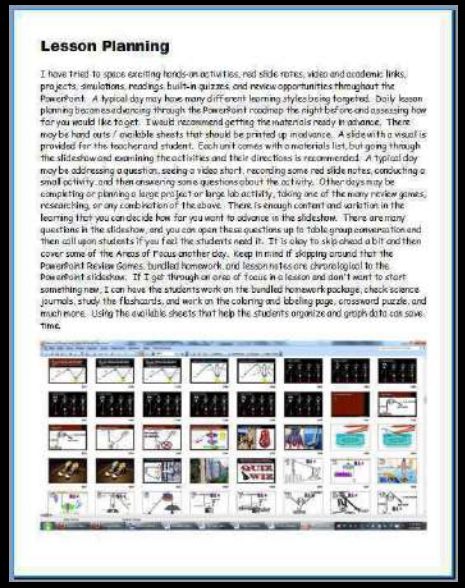
Black Slide Activity



Unit Notes

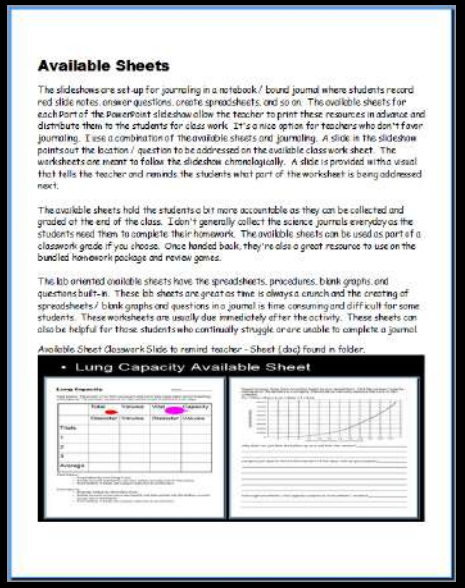
Unit notes are all of the red slide notes and much more. They also follow the slideshow chronologically. They are intended to help a student who may need them. I generally print them up at the beginning of the unit and distribute them to those students. I have also given them to every student in the class (usually the first unit of the year). In these cases they're encouraged to be a useful tool to aid students in the journaling process. Red slide notes can be difficult for some students and having the notes nearby keeps the class moving forward in a timely fashion. I have had some students use highlighters to follow along with class instruction. Students who need the notes should be instructed to pull them out everyday for class. I then slowly remove the supplied notes from the students who do not need them. I also give support staff a copy of the notes and parents who may want them. These notes are very helpful for the bundled homework package that also chronologically follows the slideshow. Having a few extra copies of the notes laying around is helpful for students who were absent or going to be absent. A copy of the notes is provided in the student folder which is very helpful but most students will use the student version of the slideshow for assistance if given a choice.

Unit Notes (Example)



Lesson Planning

I have tried to space exciting hands-on activities, red slide notes, video and academic links, projects, simulations, readings, built-in quizzes, and review opportunities throughout the PowerPoint. A typical day may have many different learning styles being targeted. Daily lesson planning becomes self-evident through the PowerPoint roadmap the night before and assessing how far you would like to get. I would recommend getting the materials ready in advance. There may be hand outs / available sheets that should be printed up in advance. A slide with a visual is provided for the teacher and student. Each unit comes with a materials list, but going through the slideshow and examining the activities and their directions is recommended. A typical day may be addressing a question, seeing a video short, recording some red slide notes, conducting a small activity, and then answering some questions about the activity. Other days may be completing or planning a large project or large lab activity, taking one of the many review games, researching, or any combination of the above. There is enough content and variation in the learning that you can decide how far you want to advance in the slideshow. There are many questions in the slideshow, and you can open these questions up to table group conversation and then call upon students if you feel the students need it. It is okay to skip ahead a bit and then cover some of the Areas of Focus another day. Keep in mind if skipping around that the PowerPoint Review Games, bundled homework, and lesson notes are chronological to the PowerPoint slideshow. If I get through an area of focus in a lesson and don't want to start something new, I can have the students work on the bundled homework package, check science journals, study the flashcards, and work on the coloring and labeling page, crossword puzzle, and much more. Using the available sheets that help the students organize and graph data can save time.



Available Sheets

The slideshows are set up for journaling in a notebook / bound journal where students record red slide notes, answer questions, create spreadsheets, and so on. The available sheets for each Part of the PowerPoint slideshow allow the teacher to print these resources in advance and distribute them to the students for class work. It's a nice option for teachers who don't favor journaling. I use a combination of the available sheets and journaling. A slide in the slideshow points out the location / question to be addressed on the available class work sheet. The worksheets are meant to follow the slideshow chronologically. A slide is provided with a visual that tells the teacher and reminds the students what part of the worksheet is being addressed next.

The available sheets hold the students a bit more accountable as they can be collected and graded at the end of the class. I don't generally collect the science journals everyday as the students need them to complete their homework. The available sheets can be used as part of a classwork grade if you choose. Once handed back, they're also a great resource to use on the bundled homework package and review games.

The lab oriented available sheets have the spreadsheets, procedures, blank graphs, and questions built-in. These lab sheets are great as time is always a crunch and the creating of spreadsheets / blank graphs and questions in a journal is time consuming and difficult for some students. These worksheets are usually due immediately after the activity. These sheets can also be helpful for those students who continually struggle or are unable to complete a journal.

Available Sheet Classwork Slide to remind teacher - Sheet (.doc) found in folder.

- This was a very brief tour. Please visit the links below to learn more and download detailed previews of the curriculum.
  - These units take me an extremely busy four years to complete with my middle level students.

Earth Science Unit Previews	Extended Tour Link and Curriculum Guide
Geology Topics Unit	Geology Topics Unit Preview Link
Astronomy Topics Unit	Astronomy Unit Preview Link
Weather and Climate Unit	Weather and Climate Unit Preview Link
Soil Science, Weathering, More	Weathering, Soil Science, Ice Ages, Glaciers Unit Preview Link
Water Unit	Water Unit Preview Link
Rivers Unit	Rivers, Lakes, and Water Quality Unit Preview Link

 = Easier (5^{th} – 7^{th} grade)

 = More Difficult (6^{th} – 8^{th} grade)

 = Most Difficult (8^{th} – 10^{th} grade)

Physical Science Unit Previews	Extended Tour Link and Curriculum Guide
Science Skills Unit 	Science Skills Unit Preview Link
Motion and Machines Unit 	Laws of Motion and Simple Machines Unit Preview Link
Matter, Energy, Envs. Unit 	Matter, Energy, and the Environment Unit Preview
Atoms and Periodic Table Unit 	Atoms and Periodic Table of the Elements Unit Preview Link

Life Science Unit Previews	Extended Tour Link and Curriculum Guide
Human Body / Health Topics 	Human Body and Health Topics Unit Preview Link
DNA and Genetics Unit 	DNA and Genetics Unit Preview Link
Cell Biology Unit 	Cell Biology Unit Preview Link
Infectious Diseases Unit 	Infectious Diseases Unit Preview Link
Taxonomy and Classification Unit 	Taxonomy and Classification Unit Preview Link
Evolution / Natural Selection Unit 	Evolution and Natural Selection Unit Preview Link
Botany Topics Unit 	Botany Unit Preview Link
Ecology Feeding Levels Unit 	Ecology Feeding Levels Unit Preview Link
Ecology Interactions Unit 	Ecology Interactions Unit Preview Link
Ecology Abiotic Factors Unit 	Ecology Abiotic Factors Unit Preview Link

[Life Science Curriculum Link]

[Physical Science Curriculum Link]

[Earth Science Curriculum Link]

Individual Lessons

Life Science Curriculum Link

Human Body Systems and Health Topics Unit

Anatomy Intro, Levels of Biological Organization Lesson Bundle
Skeletal System Lesson Bundle
Muscular System Lesson Bundle
Anatomy Intro, Skeletal, Muscular System Review Game
Healthy Eating, Molecules of Life Lesson Bundle
Obesity, Dangers of Fast Food, Eating Disorders
Healthy Eating and Living Review Game
Eating Disorders, Anabolic Steroids
Digestive System Lesson Bundle
Circulatory System and Respiratory System Lesson Bundle
Anti-Tobacco, Dangers of Smoking Lesson Bundle
Circulatory and Respiratory System Review Game
Excretory System Lesson Bundle
Nervous System Lesson Bundle
Nervous System Review Game
Endocrine System Lesson Bundle, Puberty, Hormones
Human Reproductive Lesson Bundle, Fertilization
Endocrine and Reproductive System Review Game
Immune System, HIV, AIDS, STD's Lesson Bundle
Immune System, HIV, AIDS, STD's Review Game
Anatomy Crossword Puzzle

DNA and Genetics Unit

DNA Lesson Bundle
DNA Lesson Review Game
DNA Crossword Puzzle
Cell Division, Mitosis and Meiosis Lesson Bundle
Cell Division Review Game
Mitosis and Meiosis Crossword Puzzle
Genetics Lesson Bundle
DNA and Genetics Crossword Puzzle
Genetics Review Game

Cellular Biology Unit

Introduction to Cells, Cell History, Cheek and Onion Cell Lab, Cell Theory Lesson Bundle
Cell Review Game
Cell Transport Lesson Bundle, Osmosis, Diffusion, Active Transport
Cell Transport Review Game
Characteristics of Life Lesson
Cellular Organelles Lesson Bundle
Cellular Organelles Visual Quiz
Cellular Organelles Review Game
Cell Unit Crossword Puzzle
Cell Unit Flash Cards
Cellular Biology Unit Preview, Homework Bundle, Unit Notes, more

Life Science

Individual Lessons

Life Science Curriculum Link

Infectious Diseases Unit

Infectious Diseases Unit Intro and Virus Lesson Bundle
Virus Lesson Review Game
Bacteria Lesson Bundle
Bacteria Review Game
Parasites Lesson Bundle
Immune System, HIV, AIDS, STD's Lesson Bundle
Infectious Diseases Unit Crossword Puzzle
Immune System, HIV, AIDS, STD's Review Game

Evolution and Natural Selection

Evolution and Natural Selection Lesson Bundle
Evolution and Natural Selection Review Game
Human Evolution Lesson Bundle
Life Origins and Human Evolution Quiz Game
Geologic Timescale, Earth System History Lesson Bundle
Earth Geologic History Quiz Game
Life Origins and Human Evolution Quiz Game Life Origins, Miller Urey Experiment Lesson Bundle
Ecological Succession Lesson Bundle
Ecological Succession Review Game

Taxonomy and Classification Unit

Taxonomy and Classification Lesson Bundle
Taxonomy and Classification Review Game
Bacteria Lesson Bundle
Bacteria Review Game
Kingdom Protista Lesson Bundle
Kingdom Animal Lesson Bundle
Animal Phylums Visual Quiz
Class Mammalia Lesson Bundle
Kingdom Animalia Review Game and Mammalia
Kingdom Fungi Lesson Bundle
Kingdom Fungi Review Game
Kingdom Plantae Lesson Bundle
Botany Unit Review Game
Name the Kingdom, Phylum, Class Visual Challenge
Taxonomy and Classification Crossword Puzzle

Botany Unit

Botany Unit Intro, Non-vascular Plants, Plate Evolution Lesson Bundle
Student Botany Projects, Grow Study Lesson Bundle
Botany Unit Review Game
Plants, Seeds, Seed Dispersal Lesson Bundle
Plants Review Game
Plants, Roots, Leaves, Lesson Bundle
Monocotyledons and Dicotyledons Lesson Bundle
Dendrochronology, Tree Ring Dating Lesson Bundle
Plant Hormones Lesson Bundle
Botany Unit Crossword Puzzle
Leaf Identification Lesson Bundle
Botany Unit Review Game
Plant Life Cycles, Flowers, Fruits Lesson Bundle
Plant Life Cycles, Flowers, Fruits Review Game

Individual Lessons

Life Science Curriculum Link

Ecology Feeding Levels Unit

Ecology Food Chain Lesson Bundle
Biomagnification, Bioaccumulation of Pollution, Food Chain Lesson Bundle
Ecology Feeding Levels, Pyramid of Biomass, Number Lesson Bundle
Animal Dentition Lesson Bundle
Ecology Feeding Levels Unit Review Game
Ecology Feeding Levels Unit Crossword
Food Chain Board Game

Ecology Interactions Unit

Ecology Levels of Organization Lesson Bundle
Animal Habitats Lesson Bundle
Food Webs, Predator and Prey Cycles Lesson Bundle
Biodiversity and Population Sampling Lesson Bundle
Animal Competition Lesson Bundle
Animal Camouflage and Mimicry Lesson Bundle
Ecology, Camouflage, Mimicry, Population Sampling Review Game
Symbiosis Lesson Bundle
Invasive Exotic Species Lesson Bundle
Ecology Interactions Part III, IV Review Game, Symbiosis, Exotic Species
Ecology Interactions Unit Crossword Puzzle

Ecology Abiotic Factors Unit

Ecology Non-living Factors, Light Lesson Bundle
Ecology, Non-living Factor Temperature Lesson Bundle
Photosynthesis and Respiration, Biogeochemical Cycles Lesson Bundle
Ecology Non-living Factors Quiz Game
Island Biogeography Lesson Bundle
Nitrogen Cycle Lesson Bundle
Phosphorus Cycle and Nutrient Pollution Lesson Bundle
Plant Succession, Fire Ecology, Lesson Bundle
Ecological Succession Quiz Game
Ecology Flash Cards

Individual Lessons

Physical Science Curriculum Link

Laws of Motion and Simple Machines Unit

Newton's Three Laws of Motion
Newton's Laws of Motion Review Game
Friction Lesson, Types of Friction
Kinetic and Potential Energy Lesson
Newton's Laws and Forces in Motion
Forces in Motion Review Game
Catapults and Trajectory Lesson
Simple Machines Lesson
Simple Machines Review Game
Laws of Motion and Simple Machines Unit Flashcards
Laws of Motion and Simple Machines Crossword Puzzle
Laws of Motion, Forces in Motion, Simple Machines Unit Preview, Homework, Notes

Science Skills Unit

Lab Safety Lesson Bundle
Microscopes and Magnification Lesson Bundle
Metric System / SI Lesson Bundle
Scientific Notation Lesson Bundle
Volume and Density Lesson Bundle
Scientific Method, Observation Skills Lesson Bundle
Science Skills Unit Flash Cards
Science Skills Unit Crossword Puzzle
Science Skills Unit Review Game
Science Skills Unit Preview, Homework Bundle, Notes

Atoms and the Periodic Table of the Elements Unit

Atoms, Atomic Number, Atomic Mass, Isotopes Lesson Bundle
Inside the Atom Lesson Bundle
Atoms Review Game
Atomic Theory, Electrons, Orbitals, Molecules Lesson Bundle
Atoms, Atomic Theory, Electrons, Orbitals, Molecules Review Game
Atomic Bonding, Balancing Chemical Equations, Reactions, Lesson Bundle
Atoms and the Periodic Table Crossword Puzzle and Solution
Atoms and Periodic Table Unit Preview, Homework Bundle, Unit Notes
Periodic Table of the Elements Unit Lesson Bundle
Periodic Table of the Elements Review Game

Matter, Energy, and the Environment Unit

States of Matter, Physical Change, Chemical Change
States of Matter, Physical Change, Chemical Change Review Game
Gas Laws Introductory Lesson Bundle
Gas Laws Review Game
Viscosity Lesson Bundle
Forms of Energy Lesson Bundle
Heat Transfer, Convection, Conduction, Radiation Lesson Bundle
Electromagnetic Spectrum Lesson Bundle
Forms of Energy, Particles, Waves, EM Spectrum Review Game
Electromagnetic Spectrum Visual Quiz
Electricity and Magnetism Lesson Bundle
Electricity and Magnetism Review Game
Matter and Energy Crossword Puzzle and Solution
Matter, Energy, and the Environment Unit Preview, Homework Bundle, Notes
Environment Unit Bundle
Environment Unit Bundle Review Game

Physical Science

Individual Lessons

Earth Science Curriculum Link

Earth Science

Geology Topics Unit

Plate Tectonics, Continental Drift, Earth's Core,
Plate Boundaries Lesson Bundle
Dynamic Earth Review Game
Plate Boundaries Visual Quiz
Volcanoes Lesson Bundle
Types of Volcanoes
Volcanoes Review Game
Earthquakes Lesson Bundle
Earthquakes Review Game
Rock Deformation, Compression, Tension, Shearing
Minerals Lesson Bundle
Minerals Review Game
Rock or Mineral PowerPoint Quiz
Rocks and Minerals Lesson Bundle
Rocks and Minerals Flash Cards
Types of Rocks Visual Quiz
Rocks and the Rock Cycle Lesson Bundle
Rocks and Rock Cycle Review Game
Geologic Timescale, Earth System History Lesson Bundle
Earth Geologic History Quiz Game
Geology Unit Crossword Puzzle
Geology Unit Preview, Bundled Homework, Unit Notes

Astronomy Topics Unit

Solar System and Sun Lesson Bundle
Sun Lesson Bundle
Solar System and Sun Review Game
Solar and Lunar Eclipse Lesson Bundle
Inner Planets Lesson Bundle
Inner Planets Review Game
Moon, Phases of the Moon, Tides, Seasons, Lesson Bundle
Rocketry Lesson Bundle
Asteroid Belt, Meteors, Torino Scale Lesson Bundle
Asteroid Belt and Rocketry Review Game
Mission to the Moon, Apollo Lesson
Outer Planets Lesson Bundle
Outer Planets Review Game
Beyond the Solar System Lesson Bundle
Beyond the Solar System, Galaxies, Black Holes, Constellations Review Game
Galaxy Lesson, Hubble Exploration
Astronomy Unit Crossword Puzzle
Astronomy Unit in Spanish

Individual Lessons

Earth Science Curriculum Link

Earth Science

Weathering, Soil Science, Soil Conservation, Ice Ages, Glaciers Unit

- Mechanical and Chemical Weathering Lesson Bundle
- Mechanical and Chemical Weathering Review Game
- Soil Science Lesson Bundle
- Erosion, Soil Conservation Lesson Bundle
- Soil Science, Erosion, Soil Conservation Review Game
- Weathering, Soil Science Unit Flash Cards
- Weathering and Soil Science Crossword Puzzle
- Ice Ages and Glaciers Lesson Bundle
- Ice Ages and Glaciers Review Game
- Ice Ages and Glaciers Crossword Puzzle
- Ice Ages, Glaciers Unit Flash Cards
- Weathering, Soil Science, Soil Conservation, Ice Ages, Glaciers Unit Preview

Weather and Climate Unit

- Atmosphere Lesson Bundle
- Ozone Layer, Air Pollution, Skin Cancer
- Atmosphere, Layers of the Atmosphere, Pollution Quiz Game
- Air Pressure and Winds Lesson Bundle
- Severe Weather Lesson Bundle, Hurricanes, Tornado, Blizzards
- Seasons Lesson Bundle, Axial Tilt
- Weather, Wind, Seasons, Quiz Game
- Winds, Global Winds, Wind Chill Lesson Bundle
- Oceans and Weather, Water Cycle, Clouds Lesson Bundle
- Water Cycle and Clouds Lesson Bundle

Individual

Earth Science Curriculum Link

Earth Science

Rivers, Lakes, and Water Quality Unit

Rivers and Watershed Lesson Bundle
Flooding Lesson Bundle
Benthic Macroinvertebrate Lesson Bundle
Lake Turnover Lesson Bundle
Salmon Lesson Bundle
Fish Lesson, Fashion a Fish, Lesson Bundle
Rivers, Lakes, and Water Quality Unit Review Game
Rivers, Lakes, and Water Quality Crossword Puzzle
Rivers, Lakes, and Water Quality Unit Preview, Homework Bundle, Unit Notes

Water Molecule Unit

Water Use, Water on Earth, Water Conservation Lesson Bundle
Groundwater, Groundwater Pollution Lesson Bundle
Properties of Water Lesson Bundle
Water Cycle Lesson Bundle
Water Unit Review Game
Water Unit Preview, Homework Package, Unit Notes, more

- Individual units within the curriculum

Earth Science Units	Purchase Individual Unit Link on TpT
Geology Topics Unit	Geology Unit on TpT
Astronomy Topics Unit	Astronomy Unit on TpT
Weather and Climate Unit	Weather and Climate Unit on TpT
Soil Science, Weathering, More	Weathering, Soil Science, Ice-Ages, Glaciers Unit on TpT
Water Unit	Water Unit on TpT
Rivers Unit	Rivers, Lakes, and Water Quality Unit on TpT

= Easier (5th – 7th grade)

= More Difficult (6th – 8th grade)

= Most Difficult (8th – 10th grade)

Physical Science Units	Purchase Individual Unit Link on TpT
Science Skills Unit 	Science Skills Unit on TpT
Motion and Machines Unit 	Newton's Laws of Motion, Forces in Motion and Simple Machines Unit
Matter, Energy, Envs. Unit 	Matter, Energy, and the Environment Unit
Atoms and Periodic Table Unit 	Atoms and Periodic Table of the Elements Unit on TpT

Life Science Units	Purchase Individual Unit Link on TpT
Human Body / Health Topics 	Anatomy, Human Body and Health Unit on TpT
DNA and Genetics Unit 	DNA and Genetics Unit on TpT
Cell Biology Unit 	Cell Biology Unit on TpT
Infectious Diseases Unit 	Virus, Bacteria, Parasites, Diseases Unit
Taxonomy and Classification Unit 	Taxonomy and Classification Unit
Evolution / Natural Selection Unit 	Evolution and Natural Selection Unit on TpT
Botany Topics Unit 	Botany Unit
Ecology Feeding Levels Unit 	Ecology Feeding Levels Unit on TpT
Ecology Interactions Unit 	Ecology Interactions Unit on TpT
Ecology Abiotic Factors Unit 	Ecology Abiotic Factors Unit on TpT

Curriculum Tour Link

- Thank you for your time and interest. The curriculum link above will allow to see previews of the curriculum, bundled homework packages, review games, unit notes, the welcome guide, and much more. Thank you for your interest and feel free to contact me with any questions you may have. Best wishes.

- Sincerely,
- Ryan Murphy M.Ed
- ryemurf@gmail.com

Entire Science Curriculum Link