

Name: _____ Hour: _____

Water Unit Test Study Guide

Your teacher has taken a beaker of water and placed it carefully over a lit burner in the classroom, as shown in the diagram on the right.

1. Predict what will happen to the **speed** of the water particles and the **reason** why you think this will occur.

Speed of particles = increase

Reason = the thermal energy of the water in the beaker increases

2. The beaker has been allowed to stay on the burner during the whole class. By the end of the class, you observe that there is less liquid water in the beaker. The beaker isn't leaking.

What process occurred - **Evaporation, Condensation, Precipitation?** Describe the process.

Evaporation = the liquid water particles became a gas and are now part of the air

3. After turning off the burner, you add 5 ice cubes to the hot water in the beaker. The ice cubes melt quickly. What is happening to the thermal energy of the ice cubes (**Increasing, Decreasing, Staying the same**) as they melt?

The thermal energy of the ice cubes is

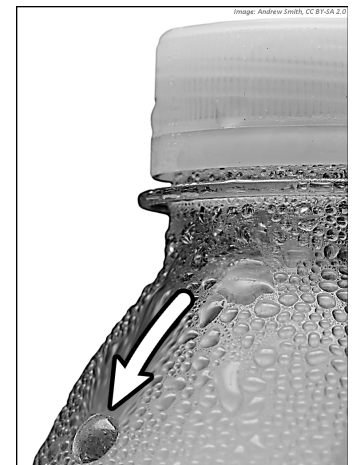
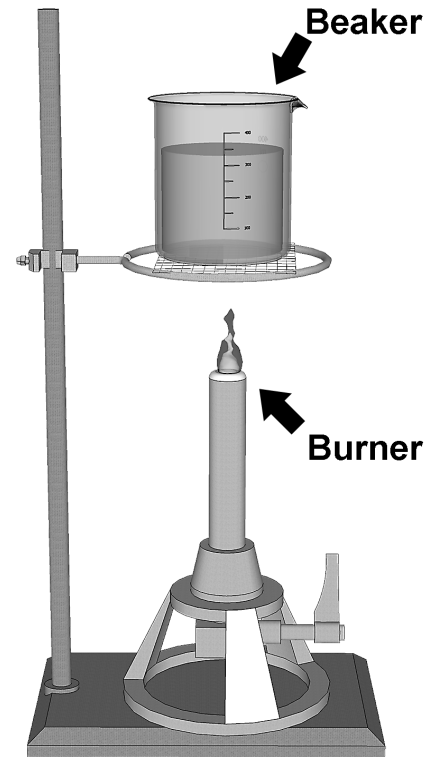
increasing

4. Yesterday, you put a bottle of water in the refrigerator. Today, you take it out of the refrigerator and place it on a table. After a few minutes, you see that small drops of liquid form on the outside of the bottle.

The drops of liquid are coming from the **air**. The drops are formed as the motion of the particles in the air **decreases**. This change in motion causes **water** in the air to change from a gas to a **liquid**.

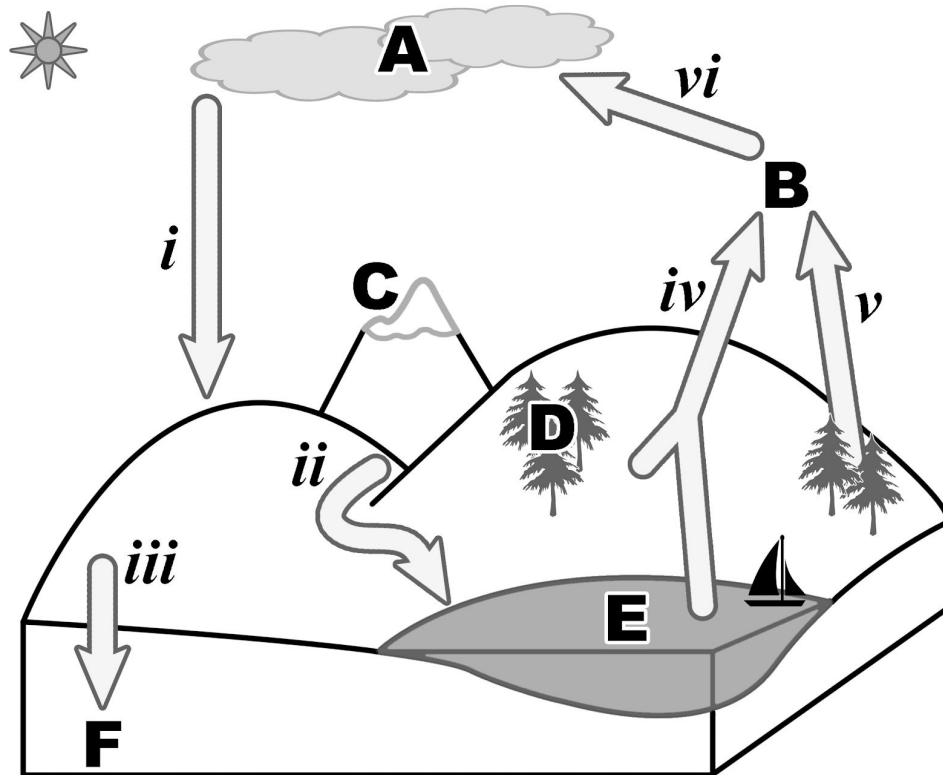
5. After a few minutes, you notice that larger drops of water are beginning to drip down the outside of the bottle, as shown in the image to the right. What is causing the liquid water to move in this way? The force of

gravity is working on the water drops.



Fill in the blanks below to complete the model that shows the cycling of water through this system.

- Left column - **reservoir** .
- Right column - **process** .



Reservoirs:

- A= Cloud
6. B= **Water vapor**
7. C= **Snow**
8. D= **Trees/Plants**
- E= Lake
9. F= **Groundwater**

Processes:

- i= Precipitation
10. ii= **Runoff**
11. iii= Infiltration
12. iv= **Evaporation**
13. v= **Transpiration**
14. vi= **Condensation**

15. What are the **two** most important causes (**Drivers**) of the movement of water through the global water cycle?

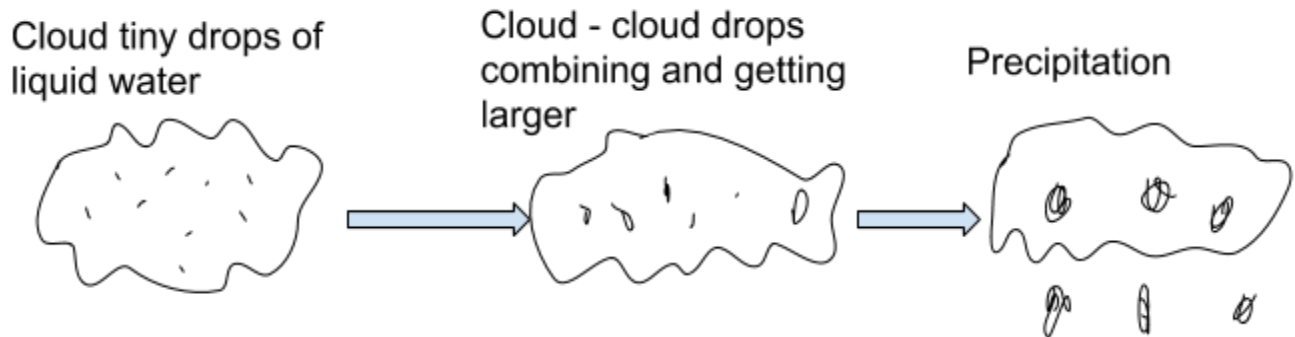
Energy from the Sun Gravity

16. Over time, the **total** amount of water present in the **global water cycle**:

Stays the same

17. Clouds: Clouds are made of **tiny drops** of **liquid** water. When the cloud condensation drops **combine** into larger **drops**, those **drops** fall as **rain** due to the force of **gravity**.

18. Add to the cloud model below to show how precipitation happens.



Your teacher purchased 5 bags of ice **today** for a class field trip **tomorrow**. Your teacher gives you the following instructions:

“We need to bring this ice with us tomorrow to keep all of the food and beverages cold for the field trip. We’ll need to build something to hold the ice and keep it from melting, because the school freezer is full. We can only use the materials we have here in the classroom. We want it to be as small as possible, and we want to save as much ice as we can for tomorrow. It must be built by the end of the class period.”

19. What is the **problem** you are asked to **solve**? **We need to build a container to hold the ice and keep it from melting until tomorrow**

Constraints: *Things that if they are not met, the solution is not acceptable. (Deal breakers)*

Criteria: *the goals we want the solution to meet as much as possible.*

20. Which of the following quotations are criteria that you have been given? **Choose ALL that apply.**

A. “bring this ice with us tomorrow”

B. “only use the materials we have here in the classroom”

C. “as small as possible”

D. “save as much ice as we can for tomorrow”

E. “must be built by the end of the class period”

21. Which of the following quotations are constraints that you have been given? Circle **ALL** that apply.

A. "bring this ice with us tomorrow"

B. "only use the materials we have here in the classroom"

C. "as small as possible"

D. "save as much ice as we can for tomorrow"

E. "must be built by the end of the class period"

22. The final instruction you are given is the following: **"Make sure that whatever you build is really light!"** How might you improve this instruction, to make sure your criteria and constraints are well defined?

A. "Light enough that it can be carried safely."

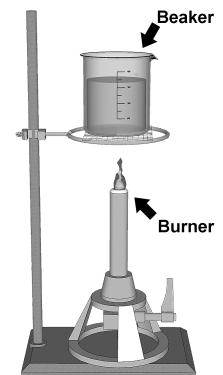
B. "Weighs less than 50 pounds."

C. "Can be lifted by just a few students."

D. No change necessary, the instruction is already well defined.

23. Please look at the diagram to the right. Water being lost from the beaker. What process is this?

evaporation

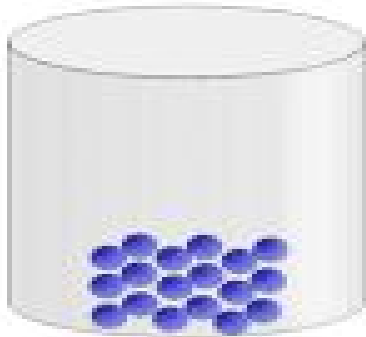


24. Please look at the diagram to the right. Small water drops forming on the outside the bottle after the bottle is taken out of the refrigerator. What process is this?

condensation



States of Matter



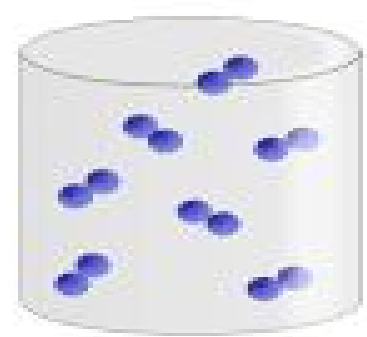
A

Solid



B

Liquid



C

Gas

25. Please label the state of A, B & C

26. What is the movement of the particles for beaker B? **Medium**

27. What causes the particles in beaker C to be far apart? a(an) **(increase/decrease)** in

Thermal Energy.