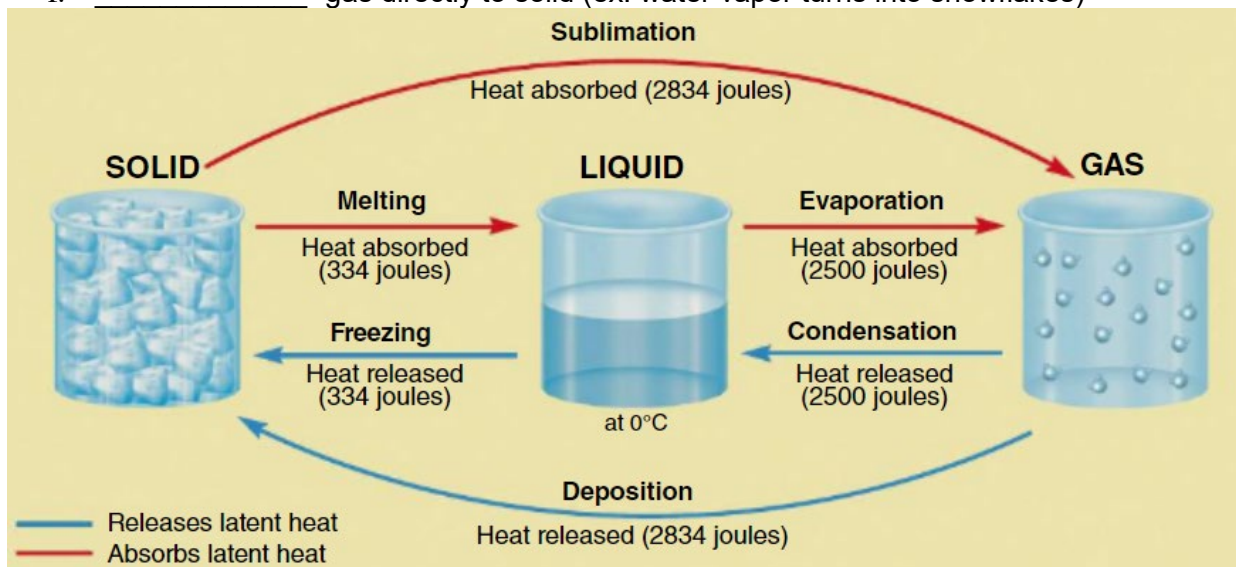


18.1 WATER IN THE ATMOSPHERE

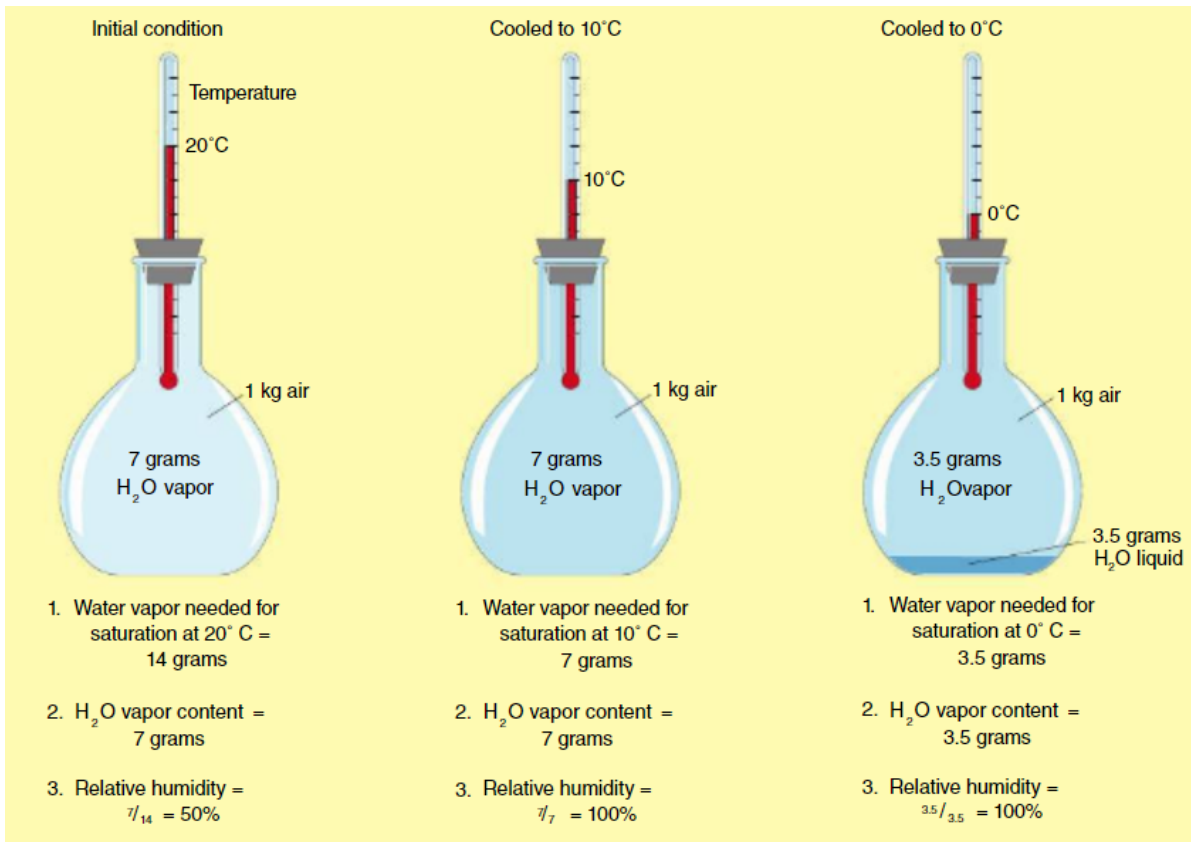
I. _____ -any form of water that falls from the _____, including snow, sleet, graze, hail, rain, drizzle, graupel

II. _____ CHANGES

- a. _____ - solid to liquid (heat absorbed)
- b. _____ - liquid to gas (heat absorbed)
- c. _____ - solid directly to gas (heat absorbed) (ex. Snowbanks shrink even if there is no melting)
- d. _____ - gas to liquid (heat released)
- e. _____ - liquid to solid (heat released)
- f. _____ - gas directly to solid (ex. water vapor turns into snowflakes)



- III. _____ - water vapor (moisture) in the air
- a. _____ - when no more water can _____ the air
 - b. _____ - The amount of water vapor in the air _____ to how much the air can _____ at that temperature and pressure.. A percentage
 - c. _____ - the temperature you need to get down to for the air to become _____ (If you get cooler than this temperature then _____ form and _____ happens)
 - d. _____ - the tool used to measure _____ in the air. Can be digital or done by hand (_____)



18.2 CLOUD FORMATION

IV. CLOUD FORMATION

- a. Air _____ - pushing molecules _____ together
- b. Air _____ - allowing air molecules to _____ apart

V. _____ temperature changes—temperature changes that happen even though heat isn't _____ or _____

- a. **Adiabatic** _____ - air rises then _____ (because there's less pressure) creating _____
- b. _____ **heating**- air _____, then compresses (because there's more pressure) creating _____

VI. PROCESSES THAT LIFT AIR

- a. _____ -air goes up a mountain slope, air _____, makes clouds, then precipitation
- b. _____ -warm and cold air masses collide, and the warm air rises up over the cold one. Air cools, makes _____, then precipitation
- c. _____ - two air masses collide and (because they can't go down) rise up. Air cools, makes clouds, then _____
- d. _____ **lifting**-unequal heating of earth, causes air to rise (because nearby air sinks) Air _____, makes clouds, then precipitation

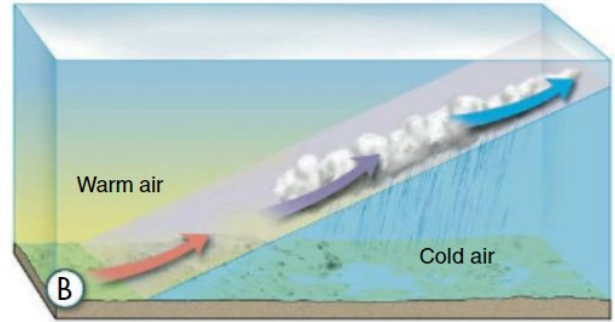
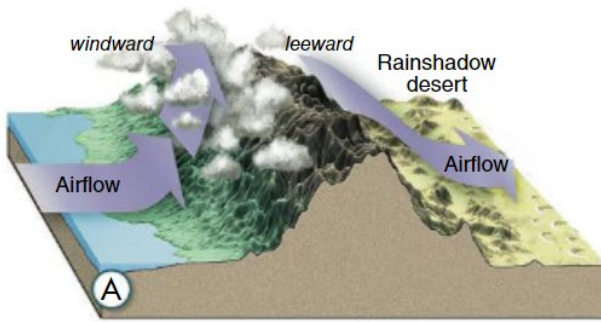
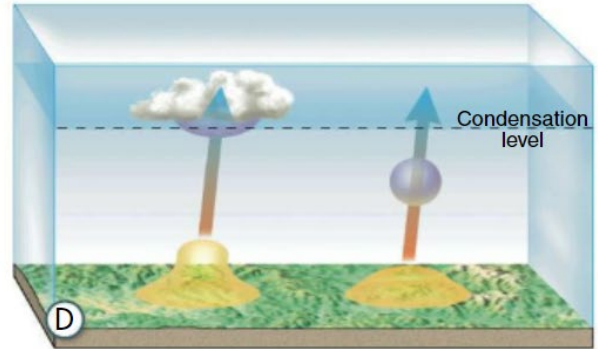
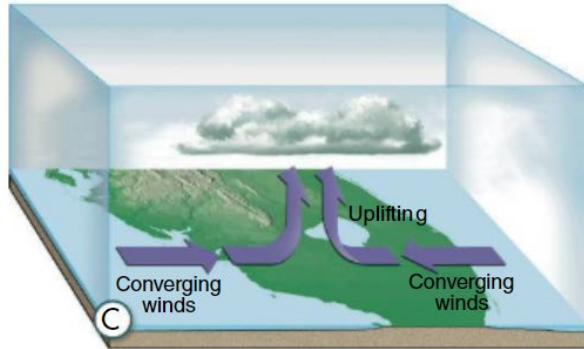


FIGURE 8
A Orographic Lifting Mountains are a barrier to air flow and force air to ascend.

B Frontal Wedging Warm, less dense air rises above cooler, denser air.



C Convergence Air is forced to rise when two air masses collide.

D Localized Convective Lifting Unequal heating of Earth's surface causes parcels of air to rise.

VII. STABILITY

- _____ air- remains in it's original _____ (warm is higher, and cold is lower)
 When lifted it creates _____ widespread clouds with light _____
- _____ air- tends to rise, (usually happens because much warmer air is lower (less dense) and cooler air is _____ (more dense and wants to sink)
 When lifted it creates thicker _____ shaped clouds and thunderstorms

VIII. CONDENSATION--When water vapor changes into liquid

- _____ water droplets
- The air must be _____
- Individual water molecules hit a particle, and cool (_____ down)
- Particles are called _____ **nuclei** (dust, _____, microorganisms, _____, salt, pollution)
- More water molecules _____ down, collide and make the droplet _____
- When too big to _____, the droplets finally _____

18.3 CLOUD TYPES AND PRECIPITATION

IX. CLOUD TYPES- based on their _____ and _____

a. By shape:

i. _____ - high, _____, thin clouds that are made of ice crystals (even in summer)

Do not make precipitation

ii. _____ - fluffy _____ shape like a cotton ball

If _____ = _____ weather

If _____ (so thick _____ can't penetrate)= brings _____

iii. _____ - smeary, _____ like clouds that form in flat layers and often cover the _____ sky

Associated with _____ weather that lasts for many hours

b. By height:

i. _____ - _____

ii. _____ - _____ height

c. By weather type:

i. _____ - " _____ "

X. _____ - a cloud on the ground

a. Can form when the ground is _____ than the air, _____ out the water

b. Can form by _____ water from lakes and rivers

XI. HOW PRECIPITATION FORMS

a. _____ clouds - _____ **PROCESS**—**supercooled** water droplets (they are colder than freezing temperature, but not _____) stick to ice crystals making them big enough to fall. They may later melt into _____.

b. _____ clouds - _____ - _____ **PROCESS** – droplets move through the cloud, collide with _____ droplets and eventually get _____ enough to fall

XII. FORMS OF PRECIPITATION

a. _____ -large condensation droplets (at least .5 mm)

b. _____ -tiny condensation droplets (smaller than .5m)

c. _____ - solid formed directly from water vapor

d. _____ - rain that falls through a freezing layer of air forming small particles of ice

e. _____ - (aka freezing rain) Supercooled water hits a surface and turn to ice

f. _____ - ice pellets that are lifted by updrafts over and over, freezing multiple layers of ice

g. _____ - tiny snowpellets, "soft hail" (looks like dippin dots) formed when supercooled water sticks to snowflakes