

Name: _____

Science Unit 1: Weather and Climate Checklist

Checklist Directions:

- All **Explore work is Group work**. This is a time to collaborate and discuss science lessons/work with peers. (This is a ✓, I, m or O in PowerSchool and **MUST** be completed prior to completing **Expand**, **Quick-Check**, or **Extend work**.)
- Expand works are to be completed Independently, but with your materials. (An **80% or better** is required before moving on to the **Quick-Check**. This is an Informal % in PowerSchool--corrections are required to 100%.)
- **Quick-Checks are to be completed Independently and without resources--an 80% or better** is required before moving on to an **Extend** or a new topic; **corrections are required for all Quick-Checks** (This is a Formal % in PowerSchool.)
- **Extend Choose 1** Extend to complete per Unit (This is a Formal % in PowerSchool.)
- **Unit Assessment** (This is a Formal % in PowerSchool--the Unit Study Guide must be completed to 80% before taking this.)
- **Homework:** Homework is to be done in EdPuzzle.

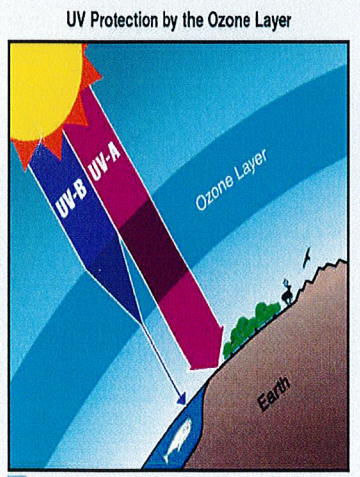
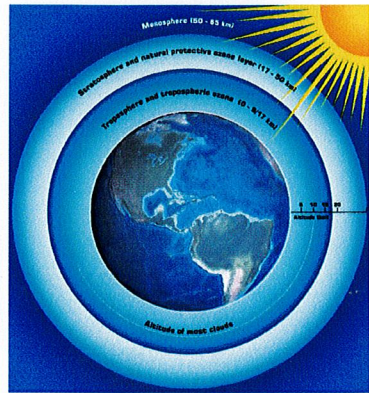
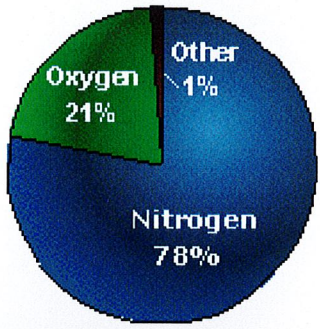
Lesson Name	Explore	Expand	Quick-Check
Scientific Processes and Lab safety	<p>1A: All do:</p> <input type="checkbox"/> a- Scientific method card sort (✓, m, O)	<p>1B:</p> <input checked="" type="checkbox"/> a- What happened? Safety lab (✓, m, O)	<input type="checkbox"/> none
Composition of the atmosphere/air pressure	<p>1C: All do:</p> <input type="checkbox"/> a- Layers of the atmosphere card layout (✓, m, O)	<input type="checkbox"/> b- Lab safety contract w/parent signature (✓, m, O)	<input type="checkbox"/> 1F: Schoolnet secure tester code JY6PY7M (%)
Water cycle	<p>1G: Choose 1:</p> <input type="checkbox"/> The water cycle dice simulation (✓, m, O)	<input type="checkbox"/> 1D: Barometer lab (%)	<input type="checkbox"/> 1J: Schoolnet secure tester code WA8FE3VE (%)

<p>Air mass/clouds/frontal boundaries</p> <p>3965</p>	<p><u>IK: All do:</u></p> <p><input type="checkbox"/> a-Air mass foldable (✓, m, O)</p> <p><input type="checkbox"/> b-Cloud type card layout (✓, m, O)</p> <p><input type="checkbox"/> c-Fronts card layout (✓, m, O)</p>	<p><input type="checkbox"/> 1L: Fronts lab exploration (___%)</p> <p><input type="checkbox"/> 1M: (___%)</p> <p><input type="checkbox"/> 8th grade only: Elements, compounds and mixtures AND Law of Conservation of Mass quick card(___%)</p>	<p><input type="checkbox"/> 1N: Schoolnet secure tester code XY7RE9G (___%)</p>
<p>Severe weather and Winds</p> <p>4</p>	<p><u>IO: All do:</u></p> <p><input type="checkbox"/> a-Severe weather card layout (✓, m, O)</p> <p><input type="checkbox"/> b- Earth science wind webquest (✓, m, O)</p>	<p><input type="checkbox"/> 1P: Severe weather product (___%)</p> <p><input type="checkbox"/> 1Q: Planet Weather Project (___%)</p> <p><input type="checkbox"/> 8th grade only: Chemistry output (___%)</p>	<p><input type="checkbox"/> 1R: Schoolnet secure tester code PE7BY8 (___%)</p>
<p>Extend</p>	<p>Unit 1 Choice Proposal (___%)</p>		
<p>Unit 1 Assessment</p>	<p><input type="checkbox"/> U1X: Unit 1 Study Guide (___%)—a grade of an 80% or better is required before you take the assessment</p> <p><input type="checkbox"/> U1Y: The Unit 1 Assessment will cover all lessons on this checklist (___%)</p> <p><input type="checkbox"/> U1Z: Unit 1 Assessment Corrections</p>		

Name: _____ Unit: _____
Date: _____

Composition and Layers of the Atmosphere Guided Notes ✓✱

Cues:



Earth's Atmosphere:

- The Earth's atmosphere is a layer of Gases surrounding Earth that are retained by Earth's Gravity.
- The atmosphere protects life on Earth by absorbing ultraviolet solar radiation, warming the surface through heat retention (Greenhouse effect), and reducing temperature extremes between day and night.

Composition of Earth's Atmosphere:

- Atmosphere is a mixture of gases:
 - Nitrogen=78%
 - Oxygen=21%
 - Argon=0.93%
 - Carbon Dioxide=0.045
 - Water Vapor and Trace Gases=0.975%
- The amount of each gas in the mixture is usually very consistent from the surface of the planet up to the top of the troposphere.
- These gases are constantly being used and renewed by the processes of respiration, photosynthesis, evaporation and condensation, the weathering of rock, and the decay of organic matter

Layers of the Atmosphere:

- Divided vertically into 4 layers based on _____:
- Troposphere-Layer where _____ occurs and is closest to Earth's surface.
 - Stratosphere-_____ layer is located here
-Temperature gradually increases because ozone absorbs _____ rays from the sun here.
 - Mesosphere-Temperature decreases with increasing _____
 - Thermosphere- Outermost layer
-Temperatures increases again because lots of _____ and little oxygen to absorb it.

Ozone Layer:

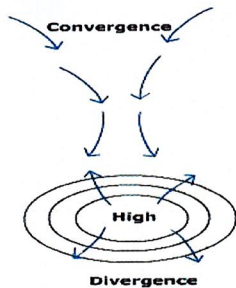
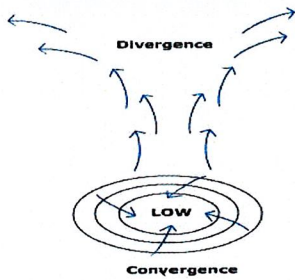
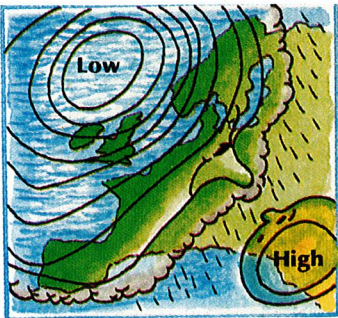
- "Good" ozone is concentrated in the stratosphere (protects us)
- "Bad" ozone is found in the _____ and leads to a number of problems (asthma, damage leaves and insect tissues)
- "Good up high, bad nearby"
- Bad comes from the reaction that happens when pollutants from cars and factories mix with the _____.

Summary:

Name: _____ Unit: _____
 Date: _____

Air Pressure Guided Notes

Cues:



What is Air Pressure?

- It is caused by the _____ of all the air in the atmosphere pressing down on Earth.
- It is also known as atmospheric pressure.
- Air pressure changes with the _____ and also when air warms up or cools down.
- Changes in air pressure cause changes in the _____.

Differences in Pressure:

- Low Pressure
- When air _____, it leaves behind an area of lower pressure, because the upward- moving air is not pressing down so hard on the surface.
 - Areas of high pressure are formed where air is _____ back down, and so pushing down harder.
 - There are many areas of high and low pressure above the Earth's surface due to uneven surface _____.
 - Air moves from high pressure to low pressure forming _____.
 - As a result, the greater the difference between the high pressure and low pressure areas is, the higher the wind _____ is.
 - Pressure is different all over the world.
 - Lows are areas of low pressure with the lowest pressure at the center.
 - Lows usually bring wet, _____ weather.
 - Highs are areas of high pressure with the highest pressure at the center.
 - Highs bring sunnier, and _____ weather.
 - The way these move from day to day causes the changes in the weather.

Measuring Air Pressure:

- Air Pressure is measured in millibars (mb) on a _____.
- The simplest kind of barometer is a mercury barometer and pressure is measured in mm (in) of mercury.
- An aneroid barometer can measure more conveniently.
- A barograph is a special kind of barometer, which records _____ changes in air pressure.

Summary:

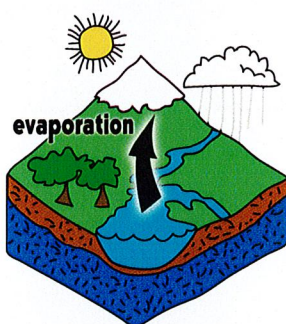
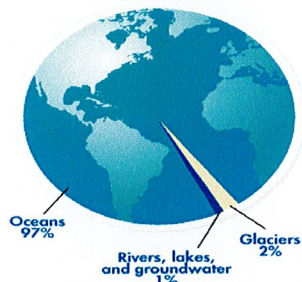
Name: _____ Unit: _____

Date: _____

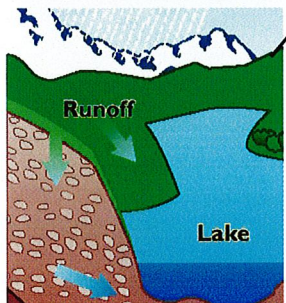
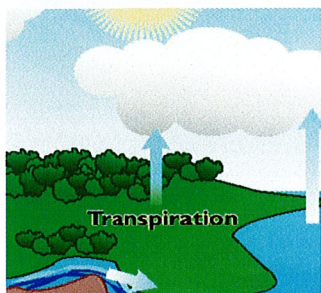
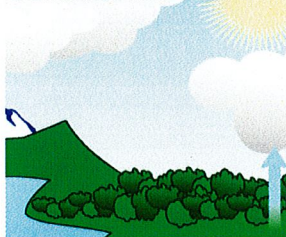
The Water Cycle Guided Notes

Cues:

Usable water in the world



Condensation



The Water Cycle:

- Less than _____% of Earth's water supply is ready for human use
- The continuous circulation of Earth's water supply.
- Water moves among the oceans, atmosphere, solid Earth and the biosphere
- The energy source for the water cycle comes from the _____

Key Terms:

- Evaporation: Water changes from a liquid to a _____ (this is what makes you feel cold after getting out of a shower-the water on your skin is changing state)
- Condensation: Water changes from a gas to a _____ (what makes your mirror cloud up while showering)
- Transpiration: When water evaporates from plant _____.

The Water Cycle:

- Water evaporates from the surface of the earth (from either water on land or from the ocean)
- It then rises, cools and condenses into _____ or snow, and falls again to the surface.
- The water falling on land collects in rivers and lakes, soil, and porous layers of rock, and much of it flows back into the _____.

Evaporation:

- _____ moves evaporated ocean water over the continents.
- More water evaporates over water than over land and more water falls over land than over the ocean.

The Water Cycle:

- Part of the water vapor that evaporated condenses (changes from a gas back to a liquid) into clouds, and then falls as rain or snow.
- Some of the rain returns to the ocean from rivers and streams as _____.
- Some seeps into the _____ to become groundwater.
- Some returns to the air by evaporation from the ground or by transpiration from plant leaves.

Runoff:

- The water that Earth cannot absorb flows over the surface of the ground and into lakes and streams.
- Most runoff evaporates back into the atmosphere
- Runoff picks up harmful _____ and carries them into streams and lakes (a bad thing)

The Water Cycle:

- There is no "one way" for the water to cycle around Earth.
- For example, water that evaporates from the ocean can return to the ocean as rain and may not be moved over land.
- The water cycle never ends.
- The water cycle is _____ meaning that the average annual precipitation over Earth EQUALS the amount of water that evaporates. (What goes up comes down!!!)

Air Mass Guided Notes

Weather vs. Climate

- _____ is constantly _____ and refers to the state of the atmosphere at any given time and place
- _____ is based on observations of _____ that have been collected over many _____ and helps to describe a place or region.

Air

- _____ is a mixture of different _____ and particles
- The air we breathe is primarily composed of _____ and _____ (99%)
- _____ is the most abundant gas in our atmosphere

Characteristics of Air

- Air holds anywhere from 0% to 4% _____ varying from time to time and place to place
- _____ air can hold _____ water than cool air.
- Because of this, a _____ night will be _____ than a clear night
- _____ are the result of water _____ and clinging to particles called _____.
- Condensation nuclei can be _____, smoke, or _____ particles.

Clouds

- Clouds are the world's blanket:
 1. _____ outgoing _____ radiation
 2. keep temperatures _____

Air Masses

- A large body of _____ with similar _____ and _____ characteristics.
- Air masses form over large _____ or _____ masses.

Movement of Air Masses

- As an air mass moves, the characteristics of the air mass change
- The _____ also changes in the area in which the air mass has moved

Classifying Air Masses

- Air masses are named according to what the _____ and _____ are like in a given area.

Temperature Characteristics

- _____ (T)- the air mass formed over a _____ area and will be warm
- _____ (P)- the air mass formed over a cold area and will be _____

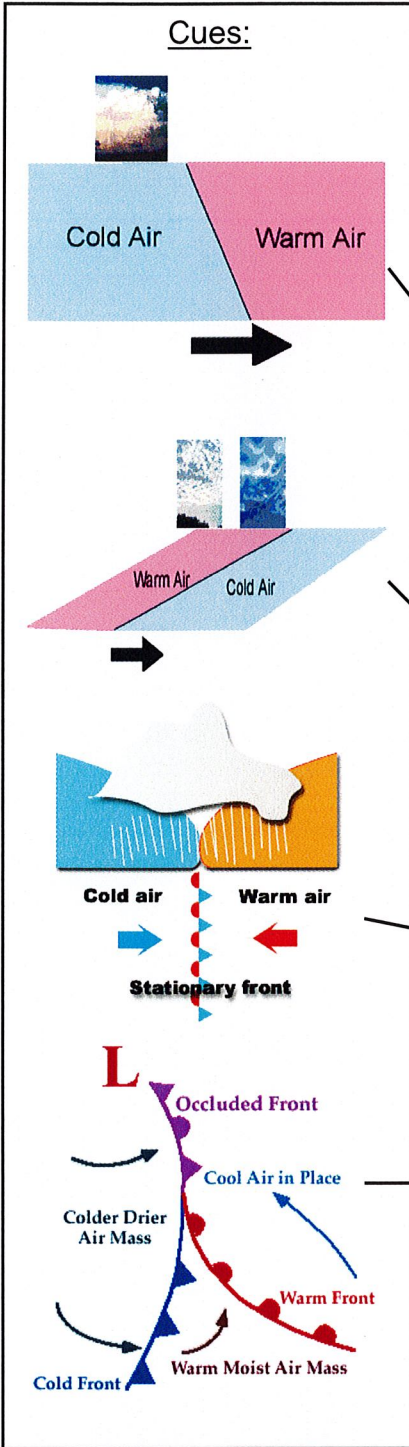
Moisture Characteristics

- _____ (c)- the air mass formed over _____ and will be _____
- _____ (m)- the air mass formed over _____ and will be _____

Types of Air Masses

- Continental Polar (cP)- _____ and _____
- Continental _____ l (cT)- dry and _____
- _____ Polar (mP)- _____ and cool
- Maritime Tropical (mT)- _____ and _____

Frontal Boundary Guided Notes



Frontal Boundaries:

- The boundaries that separate two different _____ masses are known as fronts.
- 4 kinds of fronts:
 - Cold front
 - Warm front
 - Stationary front
 - Occluded front



Cold Front:

- A cold air mass is moving into an area that is _____.
- Shown on a weather map by a blue line with triangles pointing the direction the cool air is moving.
- The weather activity in a cold front is often _____ producing short periods of heavy rain.
- Cold fronts have sudden gusty _____ high in the air creating turbulence. (Create severe weather)

Warm Front:

- Warm air mass moving into a place that is _____.
- Shown on a weather map by a red line with half circles pointing the direction the warm air is moving.
- The weather activity in a warm front generally involves long periods of _____ rain over a large area.
- In a warm front the cloud formation is very _____ often creating situations of poor visibility. (overcast)

Stationary Front:

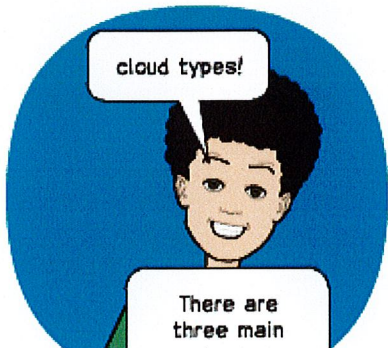
- When air is _____ to the front, the surface position of the front does not move.
- Results in light rain over a large area for several days
- Shown on a weather map with alternating red semicircles pointing away from the warm air and blue triangles pointing away from the cold air.

Occluded Front:


- When an active cold front overtakes a _____ front.
- Shown on a weather map by a purple line with alternating triangles and semicircles pointing the direction the front is moving.

Types of Clouds:

1. Cirrus: high altitude clouds; cold, so water freezes to form _____ crystals. Look like wispy feathers.
 -Do not mean unstable weather, but if there are a lot of them, it might mean a storm is coming.
1. Stratus: Low level, layered clouds that usually bring a light rain over a large area.
 _____ front clouds!
2. Cumulus: Low level and are considered neutral clouds; usually no severe weather (see them in blue skies-the puffy clouds), except when they mix with stratus clouds and show up in _____ fronts.



Missing types of clouds

4 

Severe Weather Guided Notes

- Severe weather results from the _____ movements of _____, unstable air
- Three types of severe weather:
 1. _____
 2. _____
 3. _____

Thunderstorms

- A storm producing _____ and _____.
- At any given time, there are about 2,000 thunderstorms occurring on Earth (_____ per day)!!!
- _____ - locations (near the _____) experience the most thunderstorms
- Form when warm, _____ air rises in an _____ area.
- Air forms a huge cloud and eventually, the weight of the _____ become too much for the cloud to hold and it falls as heavy _____.
- When _____ is discharged from a thundercloud, _____ occurs.
- Thunder is the _____ that we hear as the heated air violently _____.

Tornadoes

- Violent windstorm in the form of a _____ column of rotating _____, called a _____.
- There are about _____ tornadoes each year in the _____.
- Most tornadoes form as a result of _____.
- When _____ air is pushed up quickly, it can cause the slower moving air below it to start to _____.

Hurricanes

- Whirling _____ cyclone that produces _____ of at least 119mph.
- In other parts of the world, they are known as _____, cyclones and tropical cyclones.
- Form in tropical locations because warm water is their “_____”
- Form when large amounts of water vapor condense and form thunderstorms with _____ cloud rotation.
- _____: center of the hurricane that has the _____ amount of precipitation and the _____ winds.
- _____: greatest winds and precipitation
- Have the greatest range of _____ pressure because there are so many different parts of a hurricane.
- _____ = a wide dome of _____ that sweeps across the coast as a hurricane's eye moves onto the coast.
- Ways a hurricane loses energy:
 1. _____ from land _____ it down
 2. Lack of _____ water