

All About Clouds!

Geology

Mr. Traeger

Name: _____

Period: _____

Date: _____

Purpose

The purpose of this worksheet is to become more familiar with the various types of clouds and how clouds form.

Materials

- Textbook, pages 396-401
- Calculator
- Pencil

Part 1: Cloud Types

1. Define the following word roots for clouds.

| Word Root | Meaning or Definition |
|------------------------|-----------------------|
| Stratus and/or strato- | |
| Cumulus and/or cumulo- | |
| Cirrus and/or cirro- | |
| Alto- | |
| Nimbus and/or nimbo- | |

2. Fill in the following chart concerning cloud types.

| High Clouds | | |
|----------------------------------|-----------------------|----------------------------|
| Cloud Name | Height Range (meters) | Description and/or Drawing |
| Cirrus | | |
| Cirrostratus | | |
| Cirrocumulus | | |
| Middle Clouds | | |
| Cloud Name | Height Range (meters) | Description and/or Drawing |
| Altostratus | | |
| Alto cumulus | | |
| Low Clouds | | |
| Cloud Name | Height Range (meters) | Description and/or Drawing |
| Stratus | | |
| Nimbostratus | | |
| Stratocumulus | | |
| Clouds with Vertical Development | | |
| Cloud Name | Height Range (meters) | Description and/or Drawing |
| Cumulus | | |
| Cumulonimbus | | |

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Part 2: Cloud Formation

1. Clouds will form when the _____ and _____ are the same.

2. What are condensation nuclei? Why are they so important for cloud formation?

3. Explain the cloud-in-a-bottle demo that was done in class. How did we get a cloud to form in the bottle?

4. Fog is defined as a cloud on or near the _____.

5. Define the following two types of fog. How are each formed?

| Radiation Fog | Advection Fog |
|----------------------|----------------------|
| | |

6. What determines the elevation level at which a cloud will form?

7. What is the definition of adiabatic lapse rate?

8. What is the numerical value for the dry adiabatic lapse rate?

9. Why does moist air cool more slowly than dry air as you go up in elevation?

10. Define the following:

| Stable Air | Unstable Air |
|-------------------|---------------------|
| | |

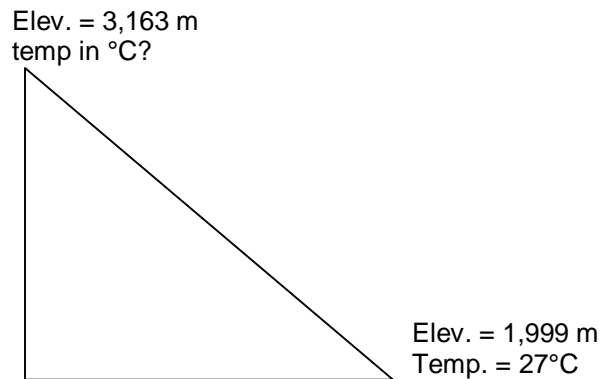
11. Which type of cloud is associated with stable air? How about unstable air?

| Stable Air Cloud? | Unstable Air Cloud? |
|--------------------------|----------------------------|
| | |

Part 3: Predicting the Altitude Where Clouds Will Form

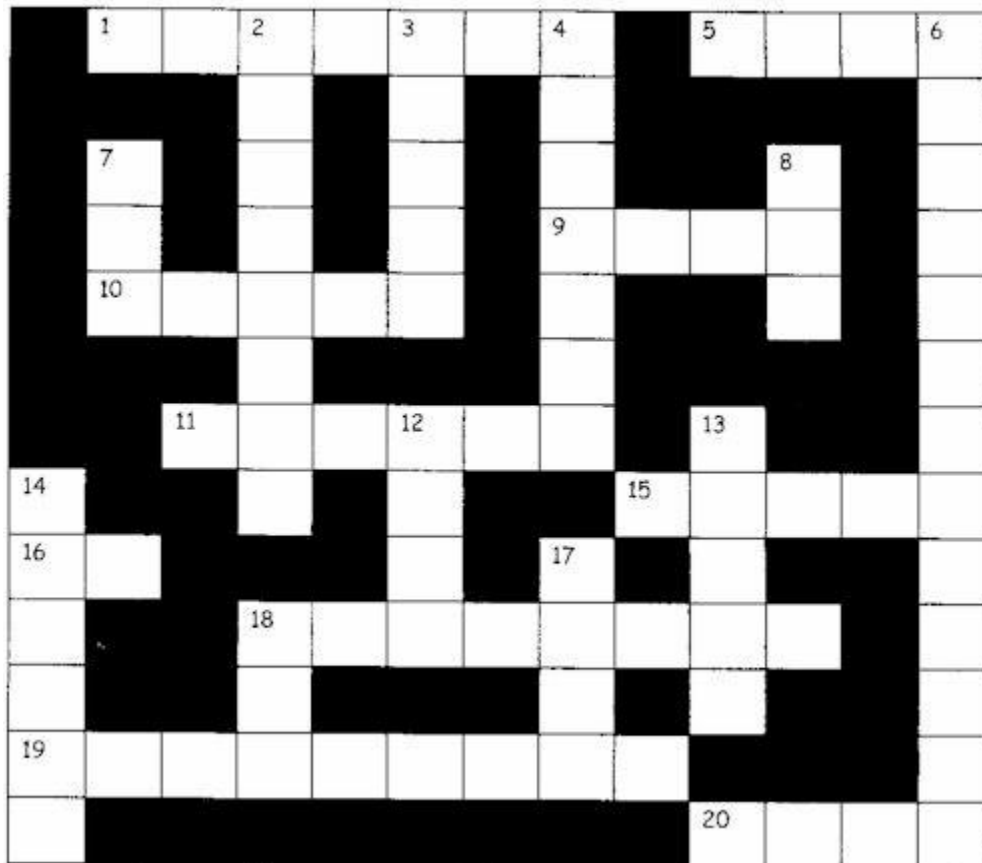
For the following problems, assume that rate of cooling is 1°C for every 100 meters of altitude. We will simplify this by ignoring the fact that dew point decreases with height.

1. Mr. Traeger took the Aerial Tramway up to the top of Sandia Peak in Albuquerque, New Mexico. The base of the tram is at 1,999 meters above sea level and the top of the mountain is at 3,163 meters above sea level. What was the temperature at the top of the mountain if the temperature at the bottom was 27°C ?



2. If the dew point temperature in the previous problem is 16°C , then at what elevation did Mr. Traeger enter the clouds while going up Sandia Peak?
3. A second cloud layer forms at 4,000 meters. What will the temperature be at this altitude?
4. How would knowing the condensation level help meteorologists to forecast weather?

Part 4: Weather Crossword Puzzle



ACROSS

1. Convective cloud, resembling a cauliflower (7)
5. Meaning of the Latin word, cumulus (4)
9. Prefix used to identify middle level clouds (4)
10. Exists on earth as solid, liquid and gas (5)
11. Name used to describe high level cloud (6)
15. Boundary between two air masses, clouds usually form here (5)
16. Clouds form when air is forced ___ (2)
18. Cooling water vapour will cause it to _____ (8)
19. Heating liquid water will cause it to _____ (9)
20. Cirrus clouds are so _____ (4); the sun can shine through them.

DOWN

2. Orographic clouds occur when air is forced over a _____ (8)
3. Nimbostratus is a type of _____ (5) cloud with rain falling from it
4. Name a low, layer cloud (7)
6. Rain, hail or snow (13)
7. Water on the ground, usually early in the morning (3)
8. A cloud that reaches to the ground (3)
12. When water droplets in a cloud get too large, they fall as _____ (4)
13. Forms on the ground if temperatures get below freezing (5)
14. In clouds, water droplets form on these (6)
17. Add this to turn ice to liquid water and liquid water to water vapour (4)
18. A cloud that sits on the top of a mountain (3)