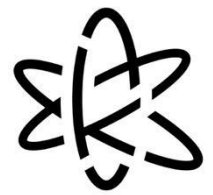




Sixth Grade Science

6th Grade Science: Summer Activity 2

Types of Weather Fronts

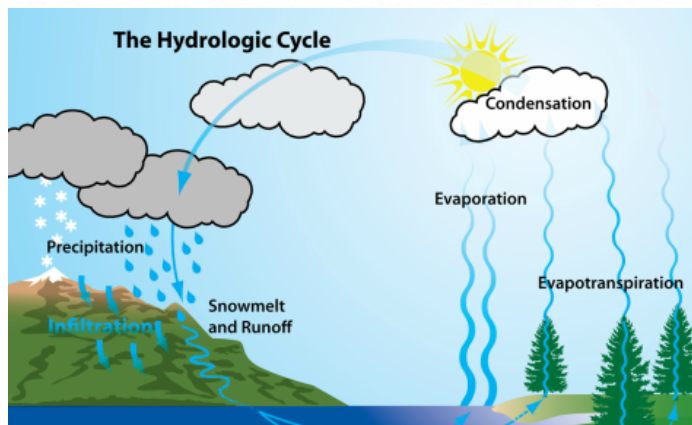
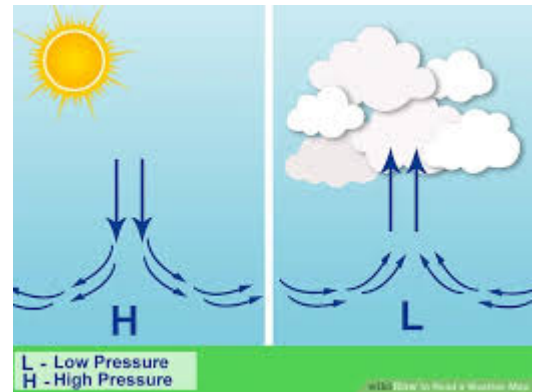


Directions: This handout goes with a KCS Teacher Video. If you have access to the video, watch the video while doing this activity. You can find the videos here <https://www.knoxschools.org/Page/21816>

Weather Basics Review

Cool air is dense, or heavy, and sinks. This creates an area of high pressure. High pressure areas tend to have dry, clear weather.

Warm air is less dense, or lighter, than cool air and rises. This creates an area of low pressure. Low pressure areas tend to have cloudy, wet weather.



Evaporation occurs when liquid water is heated by the sun and turns into water vapor. The water vapor rises into the atmosphere.

Condensation occurs when warm, moist air rises into the atmosphere and cools. The water vapor turns back into its liquid form. This is how **clouds** form.

Precipitation is any form of water that falls from clouds and reaches Earth's surface - rain, snow, sleet, or hail



Weather Terms and Facts to Remember

Thermometer - a tool that measures temperature

Barometer - a tool that measures air pressure

Humidity - the amount of water vapor in the air

Forecast - a prediction of future weather

Freezing Point of Water - 32°F or 0°C



Directions: Read the following information and answer the ✓ *Check for Understanding* questions.

You can use the following links to access interactive weather front animations.

http://www.phschool.com/atschool/phsciexp/active_art/weather_fronts/

<https://learn.weatherstem.com/modules/learn/lessons/105/index.html>

What is a front?

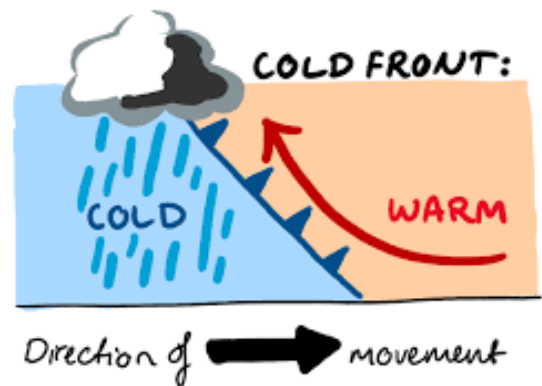
A **front** is the boundary where two air masses meet. Air masses of different temperatures and humidity do not mix easily. A front causes a change in weather conditions, which usually includes some type of clouds and precipitation.

4 Types of Fronts

1. Cold Front



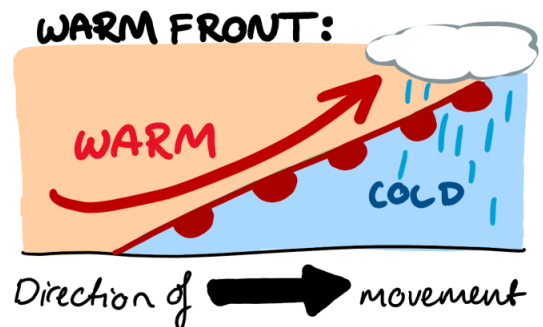
- A cold front forms when a rapidly moving cold air mass runs into a warm air mass.
- The cold air forces the warm air to rise and condense quickly forming tall cumulus or cumulonimbus clouds resulting in heavy rain or **thunderstorms**. Cold fronts **move quickly**.
- After a cold front passes, the temperature will be cooler and the skies will be clear.



2. Warm Front



- A warm front forms when a warm air mass runs into a slower cold air mass.
- The warm air slides over the cold air forming a broad area of stratus clouds resulting in steady precipitation. Warm fronts move slowly.
- After a warm front passes, the weather will be warmer and more humid.



✓ *Check for Understanding*

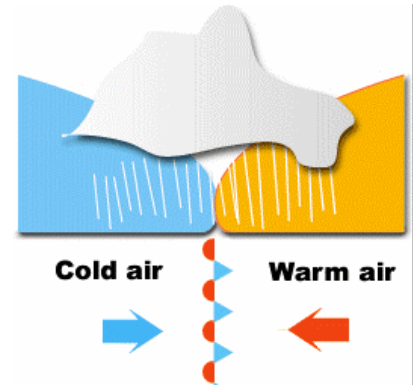
1. A front is where two _____ meet.
2. Thunderstorms are most often caused by a _____ front.

3. Which type of front moves more slowly, a cold front or warm front? _____

3. Stationary Front



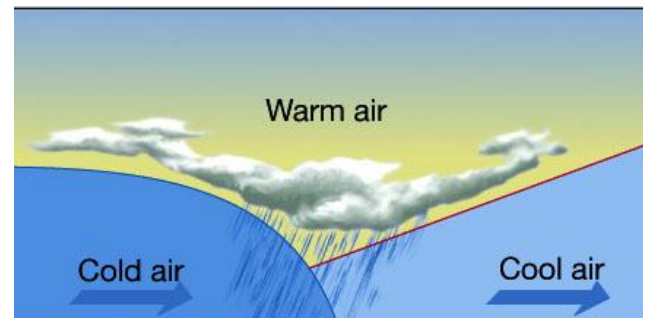
- A stationary front forms where a cold and warm air mass meet, but neither one can move the other.
- It can bring **many days** of clouds and light precipitation.
- Conditions continue until another weather system moves through.



4. Occluded Front



- An occluded front occurs when a cold air mass meets another cold air mass trapping a warm air mass on top. This often occurs when a cold front catches up to a warm front.
- Occluded fronts bring strong wind, clouds, and steady to heavy precipitation.
- After an occluded front has passed, weather is usually cold and clear.



✓ *Check for Understanding*

5. Why would temperatures be colder after an occluded front like the one pictured above passes?

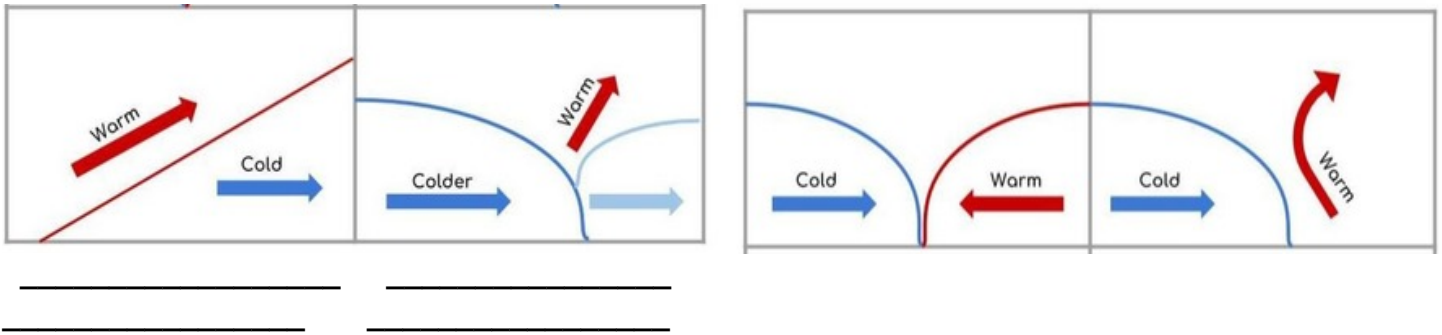
6. Which type of front could be described as a “stand off” between two air masses?

7. Which statement is true of **all 4 types** of fronts?

- a. The temperature will decrease after the front passes.
- b. After the front passes, humidity will increase.
- c. The front will produce a change in the weather.
- d. A thunderstorm is likely as the front passes.

Lesson Review

Directions: Label each front diagram as **cold**, **warm**, **stationary**, or **occluded**.



Directions: Label each statement with **C** for **cold front**, **W** for **warm front**, **S** for **stationary front**, or **O** for **occluded front**. *Hint: Each letter will be used twice.

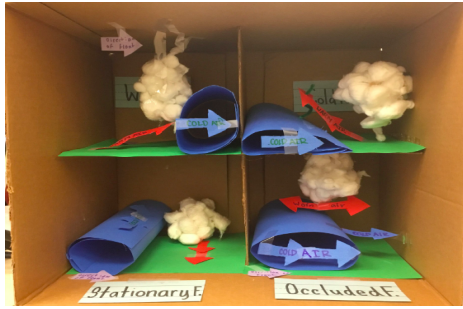
- _____ Warm air is trapped above two cold air masses
- _____ Many days of clouds with light precipitation
- _____ Varied weather conditions - moderate to heavy precipitation
- _____ Cold air moves under warm air, forcing it to rise quickly
- _____ Warm air slides over cold air
- _____ Cold and warm air meet and stay in place
- _____ Strong thunderstorms likely
- _____ Steady precipitation and temperature increase

Extension Activity: Design & Construct a Model of Fronts

Objective: Students will design and construct a model(s) that can be manipulated to demonstrate how air masses interact to create a frontal boundary when they meet. The model should show at least 2 different fronts but could show all 4 weather fronts. The model should include any weather conditions that would occur at the front.

Criteria:

- The model must be able to be manipulated to show the movement of air masses and not be just one snapshot in time. In other words, you must be able to move the air masses within your model.
- The model should show how the fronts form and what weather conditions they bring
- Try to use recycled materials or materials around the house for the project (poster board, boxes, popsicle sticks, paperclips, yarn, cotton balls, construction paper...) See picture below for inspiration.



Please share your models with your teachers. I know they would enjoy seeing your work! You can also share what you've learned by tweeting @KCSScience.