

Weather & Climate

Chapter 11

Weather & Climate

Lesson 1: Weather

Weather describes the atmospheric conditions of a place at a certain time.

SO WHAT?

Weather affects our lives in many ways.

THINK:

**What words do you associate with
“weather?”**

What You'll Learn:

- **Identify** some of the factors used to describe weather.
- **Differentiate** between the terms *humidity*, *relative humidity*, and *dew point*.
- **Describe** the processes that move water within the water cycle.

Vocabulary

Use your book to locate the definitions for the Review Vocabulary, New Vocabulary, and Academic Vocabulary words on page 120 of your Science Notebook.

Weather Factors

Organize information by listing and briefly describing factors that describe weather

Factors that Describe Weather

Factor	Description
Air temperature	Measure of the average kinetic energy of air molecules.
Air pressure	Pressure that a column of air exerts on the air below it
Wind	Its direction is from where it is coming
Humidity	Amount of water vapor per volume of air
Relative humidity	Amount of water in the air compared to how much it can hold
Dew point	Temp at which air can hold no more water vapor
Clouds & Fog	Caused when air reaches its dew point. Water condenses and forms droplets

Weather Factors

Identify four types of precipitation & describe their forms when they reach Earth's surface.

Types of Precipitation

```
graph TD; A[Types of Precipitation] --> B[Rain: water droplets]; A --> C[Snow: solid, frozen crystals of water]; A --> D[Sleet: Small ice particles that began as rain and froze as they fell]; A --> E[Hail: large pellets of ice];
```

Rain: water droplets

Snow:
solid,
frozen
crystals of
water

Sleet:
Small ice
particles
that began
as rain and
froze as
they fell

Hail: large
pellets of
ice

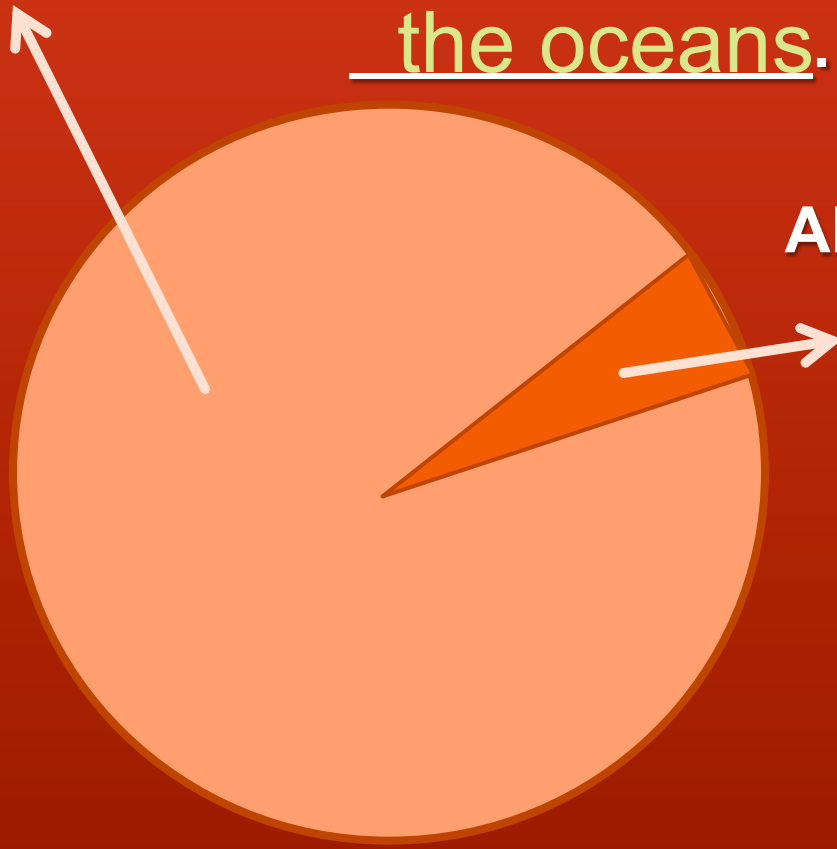
Summarize It!

**Summarize a main idea of the
above section.**

The Water Cycle

Label the graph about water in the hydrosphere.

About 96% of Earth's water is stored in
the oceans.

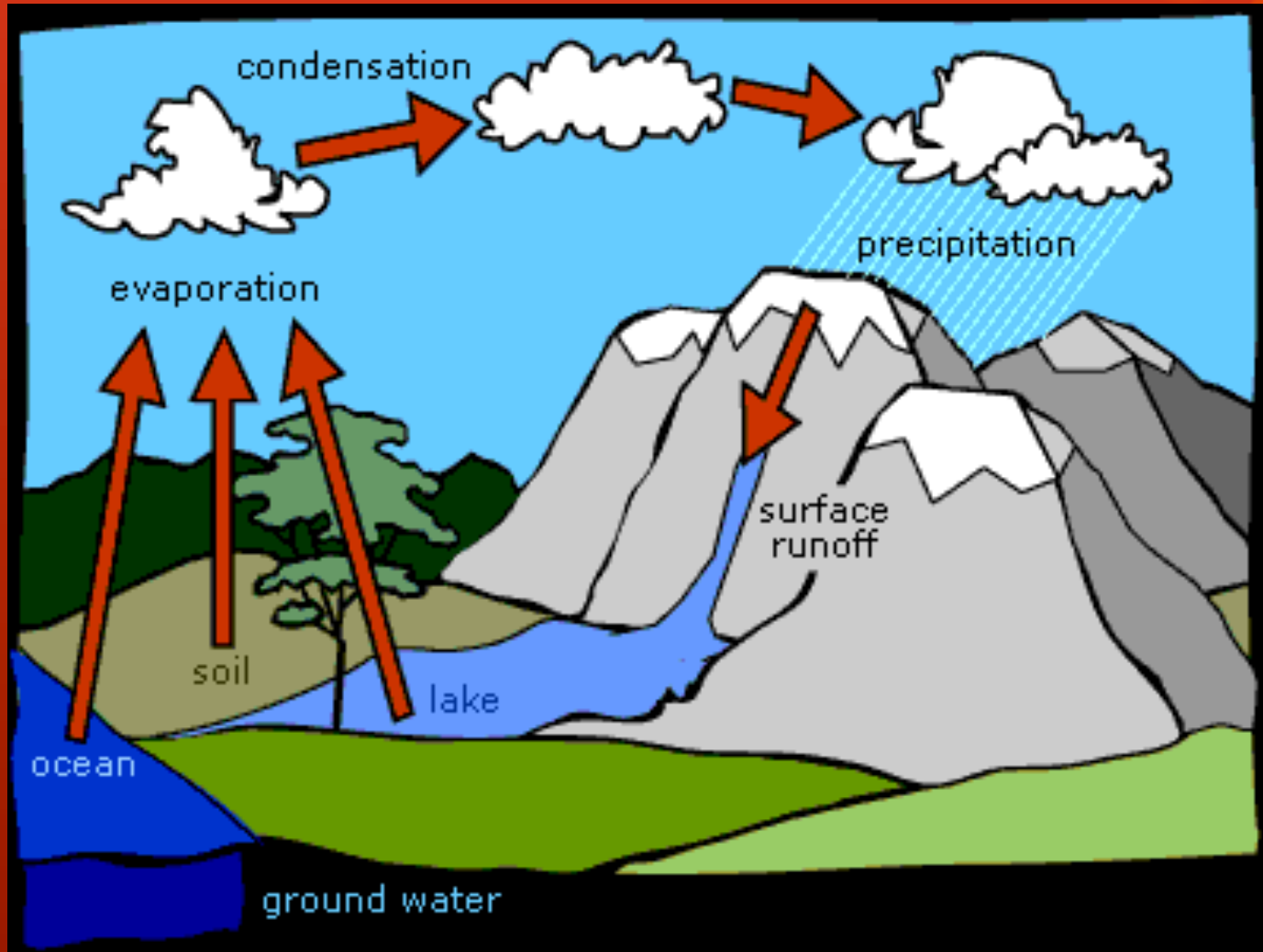


About 4% of Earth's water is
present as

fresh water in
Glaciers, polar ice,
lakes, rivers, and
under the ground

The Water Cycle

Model the water cycle.



Summarize It!

Summarize three main ideas of the above sections with three bullet points.

Weather & Climate

Lesson 2: Weather Patterns

Several factors drive changes in weather.

SO WHAT?

Weather can change quickly and can be severe.

THINK:

How far into the future do forecasters predict the weather? Are their predictions usually accurate?

What You'll Learn:

- **Identify** some of the factors involved in weather variations.
- **Define** air masses and weather fronts.
- **Differentiate** between high- and low-pressure systems.
- **Describe** some severe weather events and their effects.

Vocabulary

Use your book to locate the definitions for the Review Vocabulary, New Vocabulary, and Academic Vocabulary words on page 123 of your Science Notebook.

The Changing Weather

Summarize information about the characteristics of an air mass's key weather features.

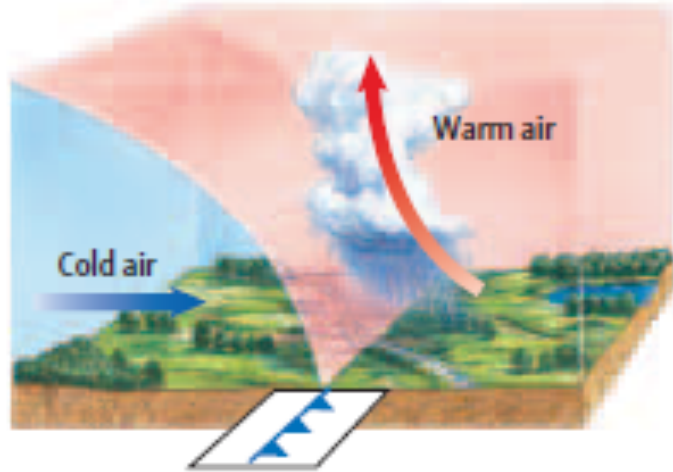
The weather features that characterize an air mass include:

Temperature & Relative Humidity.

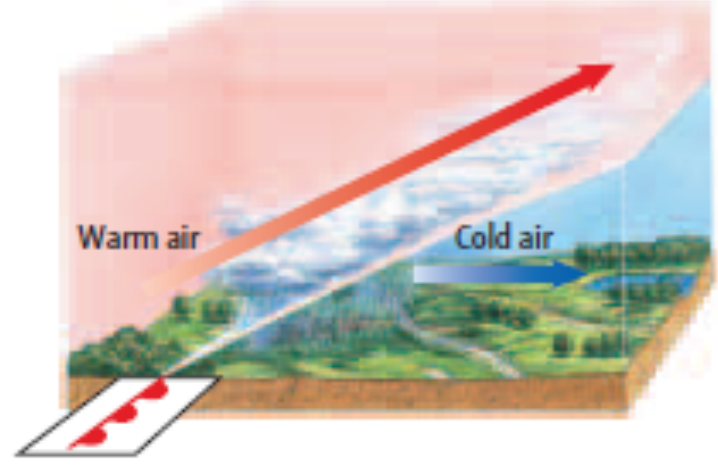
An air mass gets its characteristics from
the surface over which it develops.

The Changing Weather

Create a diagram of a warm front and a cold front in the space below. Include labels for the air masses in your diagram.



Cold Front



Warm Front

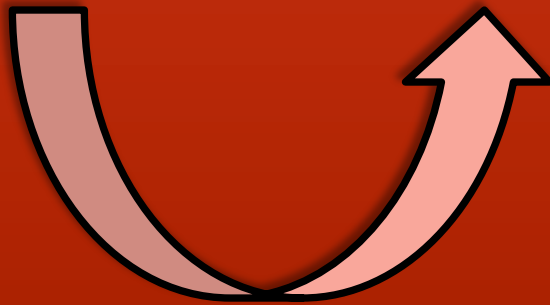
**Lighter, warmer air
moves up over
heavier, colder air,
forming clouds.**

**Cold air pushes warm
air up into the
atmosphere, where it
condenses and forms
clouds.**

The Changing Weather

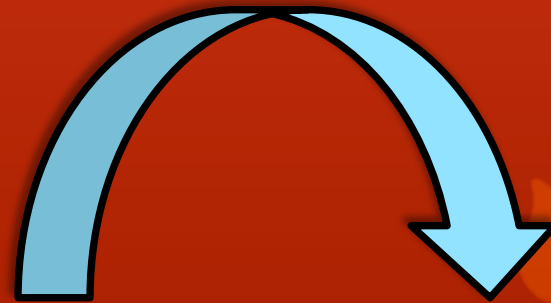
Predict what will happen to the air pressure near Earth's surface as air moves vertically.

**As warm air
rises,**



**air pressure
DECREASES**

As cold air sinks,



**air pressure
INCREASES**

Summarize It!

Summarize the main ideas of the above sections in a short paragraph.

Cycles That Affect Weather

Identify and briefly describe three cycles that affect weather.

Cycles That Affect Weather

Day & Night:

Daily cycle of warming and cooling of air and ground.

El Niño & La Niña:

Changing ocean surface temperatures result in heavy rain or extended drought.

Seasons:

Change of temperatures and length of day due to tilt of Earth's axis relative to the Sun.

Cycles That Affect Weather

Organize information about droughts and floods in the table.

	Droughts	Floods
Caused by:	Lower than usual precipitation for months or years	Extended periods of heavy rain or melting snow
May result in:	Major decrease in water supply for population & agriculture	Damage to living areas of both humans and wildlife
Recent occurrences:	California: 1987-1993	Midwest, 1993 California, 1997 New Orleans, 2005

Cycles That Affect Weather

Summarize why the damage from flash floods is increasing.

As buildings are constructed and land is paved over, there is less land and vegetation to absorb runoff water.

Summarize It!

Summarize the main idea of
the above sections.