**Section 1**

**Weather** - refers to the state of the atmosphere at a specific time and place. It is caused by uneven heating of Earth’s atmosphere.

The **Sun** provides almost all of Earth’s energy.

Cooler air is denser and tends to sink, bringing about high atmospheric pressure.

Wind results because air moves from regions of high pressure to regions of low pressure.

Wind speed can be measured using an **anemometer** (a nuh MAH muh tur). Anemometers have rotating cups that spin faster when the wind is strong.

The amount of water vapor present in the air is called **humidity**.

The formation of liquid water from water vapor is called condensation.

When enough water vapor is present in air for condensation to take place, the air is **saturated.**

**Relative humidity** is a measure of the amount of water vapor present in the air compared to the amount needed for saturation at a specific temperature. If you hear a weather forecaster say that the relative humidity is 50 percent, it means that the air contains 50 percent of the water needed for the air to be saturated.

The temperature at which air is saturated and condensation forms is the **dew point.**

Water falling from clouds is called **precipitation**.

**Section 2**

**Air masses** are a large bodies of air that have properties similar to the part of Earth’s surface over which it develops. Six major air masses affect weather in the Unites States.

An air mass that develops over land is dry compared with one that develops over water.

Weather has high- and low-pressure systems. Winds blow from areas of high pressure to areas of low pressure and West to East.

**High-pressure** (Happy Happy) areas are associated with **fair weather or good weather.**

**Low – Pressure** (Lousy Lousy)- Clouds or preciptation

**Air pressure** is measured using a **barometer**.

mT= maritime tropical = warm, moist or humid

cP= continental polar= cold, dry

cT = continental tropical= hot, dry,

mP = maritime polar= cool, moist

**Fronts**

A boundary between two air masses of different density, moisture, or temperature is called a **front**.

Cloudiness, precipitation, and storms sometimes occur at frontal boundaries.

**Four types of fronts include**:

1.cold- cold air pushes warm air up

2.warm- rises above cold air

3.occluded – cool air, cold air, and warm air meet

4.stationary- remain still

**Severe Weather**

**Thunderstorms** occur in warm, moist air masses and along fronts.

strong winds. Hail, flash flooding can occur.

**Lightning and Thunder** - When current flows between regions of opposite electrical charge, lightning flashes.

Thunder results from the rapid heating of air around a bolt of lightning.

**Tornadoes** - A tornado is a violently rotating column of air in contact with the ground. a funnel cloud is formed. If the **funnel** comes into contact with Earth’s surface, it is called a tornado.

**Hurricanes** - Most powerful storm. It is a large, swirling, low-pressure system that forms over the warm Atlantic Ocean. It is like a machine that **turns heat energy from the ocean into wind.** Similar storms are called typhoons in the Pacific Ocean and cyclones in the Indian Ocean. Have high winds, tornadoes, heavy rains, and high waves.

**Blizzards** - temperature is low, poor visibility (hard to see) due to snow. Persists for three hours or more.

severe weather **Watch** - are issued when conditions are favorable for severe thunderstorms, tornadoes, floods, blizzards, and hurricanes

When a **warning** is issued, severe weather conditions already exist.

**Section 3**

**Weather Observations**

A **meteorologist** (mee tee uh RAH luh jist) is a person who studies the weather. They gather information about current weather and use computers to make predictions about future weather patterns.

A station model shows the weather conditions at a specific location on Earth’s surface.

**isotherms**  (I suh thurmz) that connect locations of equal temperature.

An i**sobar** is a line drawn to connect points of equal atmospheric pressure. Isobars that are **close together** indicate a large pressure difference over a small area, which causes **strong winds**.