PRIMARY ACTIVITY: WEATHER PATTERNS

CONCEPTS

- Weather changes from day to day. Weather changes with the seasons.
- Weather is not the same in all areas of the country or the world.
- Weather can be described in measurable quantities.

MATERIALS

- Blank calendar (one for each student or a large one for the entire class)
- Weather symbols such as sun, cloud, rain drop, snowflake, lightning
- Crayons, markers or colored pencils

CONCLUSIONS

- Ask the students what the most prevalent weather was over the time period.
- Ask the students what patterns they see in the graphic depictions of the weather data.
- Have the students predict what the weather will be in the coming weeks or months.

TIME

Three-five minutes each day for a week, month, or year

PROCEDURE

1. Each day at the same time, have the students record the weather by drawing or pasting the appropriate symbol on the calendar. Older students can also record the temperature, amount of precipitation, and wind speed and direction.
2. Use the weather data to create tally charts, bar graphs, or line graphs.
3. Compare and analyze the data over the selected time period.

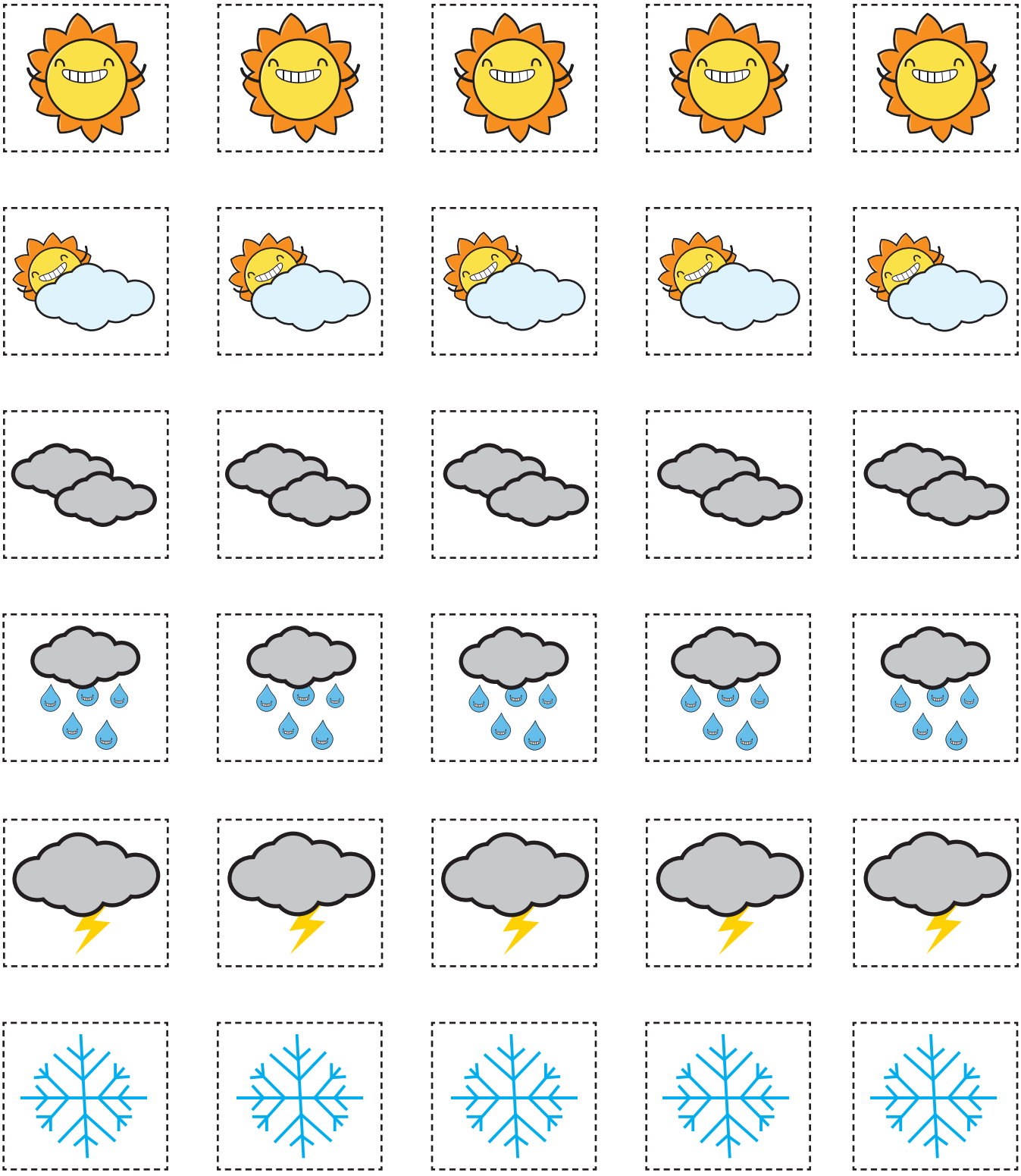
EXTENSIONS

- Save the weather calendar data each year to have historical data for students to compare.
- Compare weather data for the same time period with weather in other geographic areas.

MONTH_____ **YEAR**_____

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY

WEATHER SYMBOLS



ELEMENTARY ACTIVITY: READING WEATHER MAPS

DIRECTIONS

Use the weather map below to answer the questions at the bottom of the page.

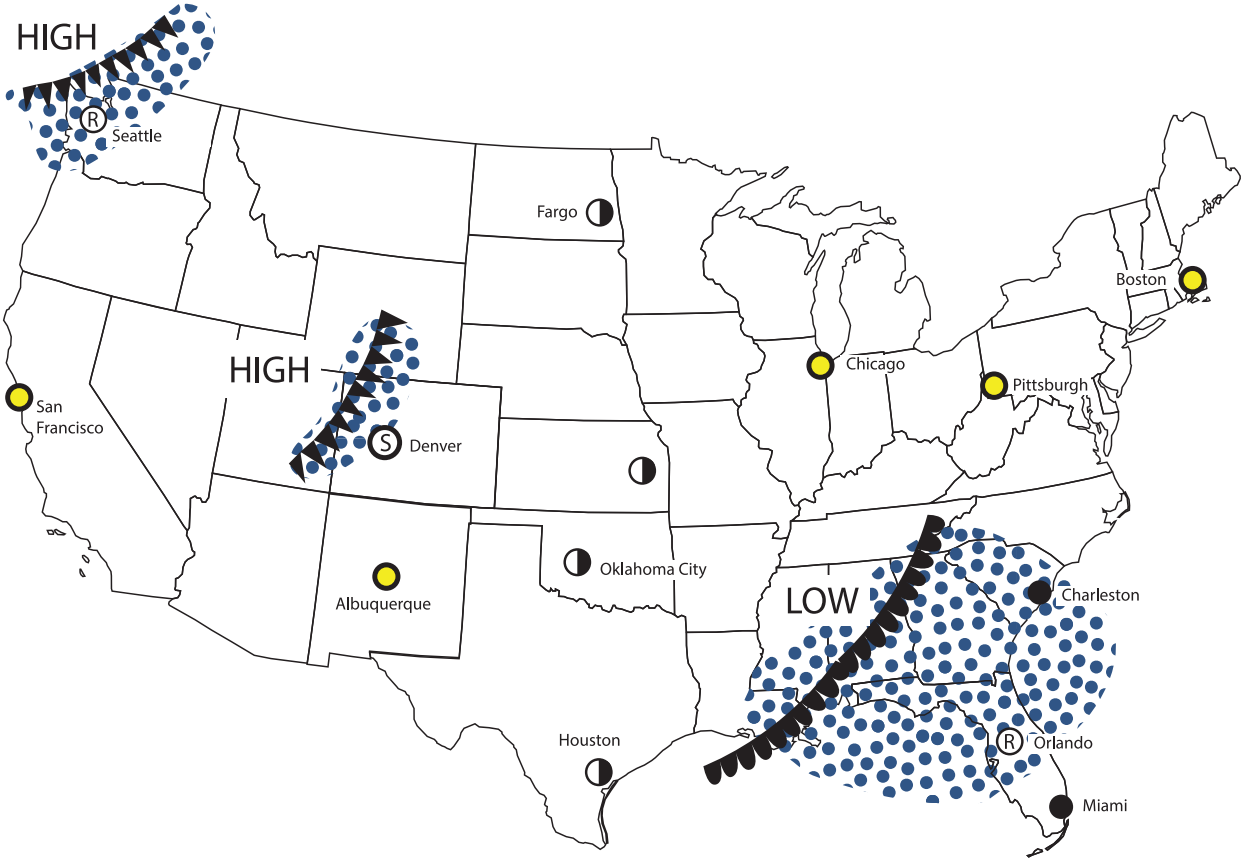
BACKGROUND

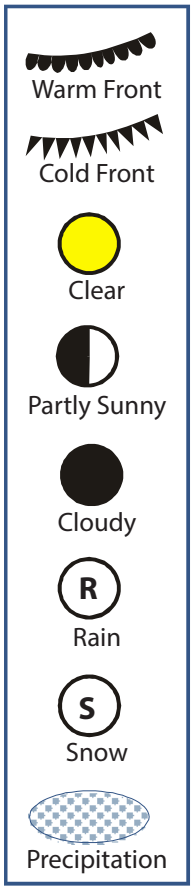
Weather maps use symbols like the ones below to show the weather in different areas of the country.

The words HIGH and LOW show where the centers of air masses are located. High pressure areas usually move toward low pressure areas.

With a WARM FRONT, warm air slowly pushes away cold air. Slow steady rain is usually followed by warm, damp weather.

With a COLD FRONT, cold air pushes away warm air. Storms are usually followed by cool, clear weather.





1. Name two cities where it is raining today.

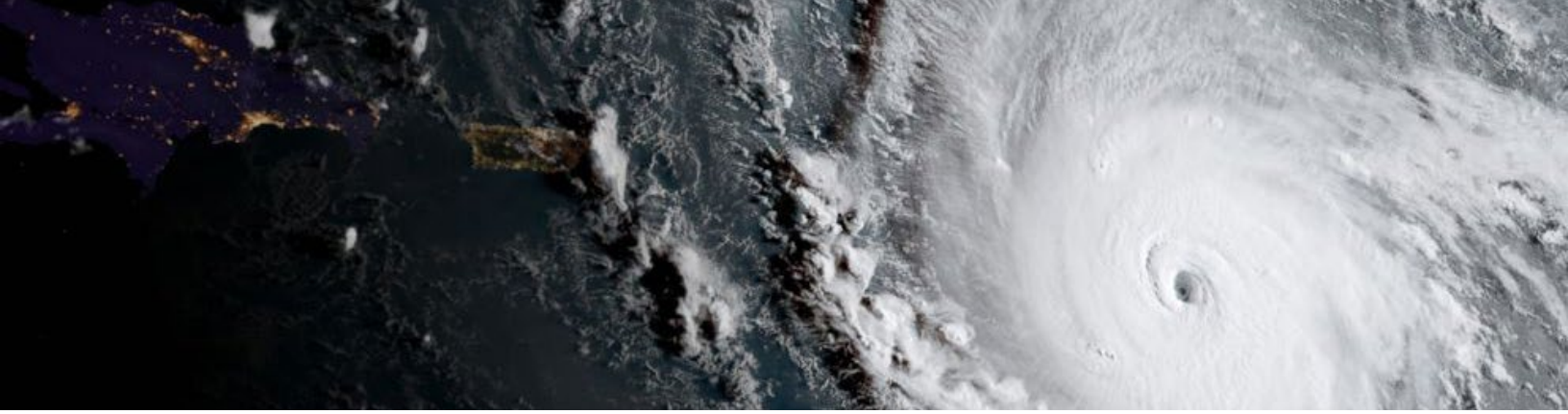
2. What do you predict the weather will be in Miami tomorrow? Draw the symbol here.

3. What do you predict the weather will be in Denver tomorrow? Draw the symbol here.

4. What do you predict the weather will be in Denver in a few days? Draw the symbol here.

5. What do you predict the weather will be in Seattle tomorrow? Draw the symbol here.

6. Name a city that you predict will have clear weather for the next few days.

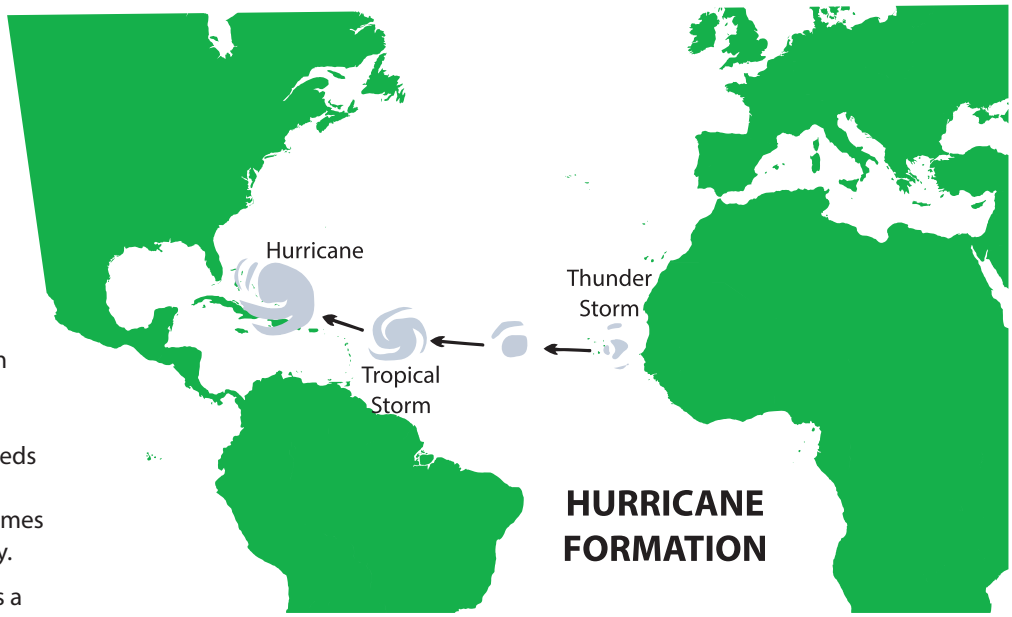


A satellite image released by NOAA shows Hurricane Irma as it moves westward.

INTERMEDIATE ARTICLE: THE ENERGY IN HURRICANES

Hurricanes are huge rotating storms called tropical cyclones. Hurricanes form in the Atlantic or eastern Pacific Ocean. When similar storms form in the western Pacific, they are called typhoons. In the Indian Ocean, the storms are called cyclones.

Tropical cyclones have distinct characteristics. They are tropical because they form in the ocean near the equator. They are cyclonic, which means the storm winds spin around an eye located in the center of the storm. Tropical cyclones are low-pressure systems that have wind speeds of at least 74 miles per hour. The average hurricane contains energy equal to 200 times the world's electricity generating capacity.



A tropical cyclone, or hurricane, begins as a thunderstorm. A hurricane in the Atlantic Ocean often forms as a storm off the west coast of Africa. It moves west toward the southern United States, picking up energy along the way.

As it crosses the ocean near the equator, the thunderstorm travels across warm, humid air. Water vapor condenses in the storm clouds and heat is released in the process. This heat provides much of the energy for the developing storm. The heat causes the air to rise, leaving a place for additional warm, moist air to fill. As the cycle of evaporation, condensation, heat release, and rising air continues, a circular pattern of wind develops around the center of the storm. This center becomes the eye of the hurricane.

Wind is all around the developing storm. When surface winds come together from different directions in the area where the storm is developing, they push up more warm, moist air. This push strengthens the storm's winds, giving the storm more energy. As the storm continues to build, high altitude winds push the rising air away from the top, resulting in a continuous flow of air through the storm.

Since a hurricane is a low-pressure storm, it is affected by high-pressure air in the area. As the storm continues to grow and rise, it reaches altitudes where the air pressure is higher. This higher-pressure air helps to remove heat from the rising air. It can be pulled toward the center of the storm, where the air pressure is lowest. When the high-pressure air moves into the center, it fuels the storm's growth and increases wind speeds.

A storm becomes a hurricane in three stages. First is a tropical depression, which has wind speeds up to 38 miles per hour. As the storm grows, it becomes a tropical storm, with wind speeds between 39 and 73 miles per hour. When wind speeds reach 74 miles per hour or more, the storm is called a hurricane.

Once a tropical depression develops into a tropical storm, it is given a name to help track it. If the storm develops into a hurricane, the name stays the same. Each year, names are chosen by the World Meteorological Organization, with a different list of names for Atlantic and Pacific storms. The list alternates between male and female names. The first storm of the year has a name that begins with the letter A. The hurricanes currently impacting the U.S. are Hurricane Harvey, Hurricane Irma, Hurricane Jose and Hurricane Katia.

For more information about hurricanes and satellite imagery of hurricanes, visit the National Hurricane Center at www.nhc.noaa.gov. For information about the people that fly airplanes into hurricanes to record data and take photos of the storms, visit www.hurricanehunters.com.